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IS ATROPHIC RHINITIS ALWAYS AUTOCHTHONOUS? THE NECESSITY OF ESTABLISHING AN EXACT DIAGNOSIS IN ORDER TO DETERMINE THE TREATMENT.*

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Although I recognize the great honor offered me in the cordial invitation to open the discussion on ozena, and although I comply with pleasure in spite of the many difficulties to be overcome in traversing the great distance between this country and my own, I confess that I do so with a certain fear, because the results of my researches still lack the contributions and confirmation of other investigators.

Before I undertake to unfold my theory to this honored assembly, allow me to present a short survey of the work

*Opening of a Discussion, read by invitation at the Fourteenth International Medical Congress (Section on Laryngology), Madrid, 1903.

thus far accomplished in this field. Years ago Sauvages and Tillot propounded the theory that congenital narrowness of the nasal canals was the cause of ozena and that dysodia and fetor were generated by the retention of great quantities of moisture. That this is fallacious was pointed out by Gottstein* who showed that a stenosis of the nasal cavities cannot possibly create a stench. We have only to recall polypi that at times make the nose entirely impassable to currents of air, and where the discharge of secretions is accomplished by the greatest effort—and yet no ozena is present.

Then the abnormal width of the nasal fossae was made responsible for ozena. This theory, represented especially by Gottstein and Paul Heymann,† seems more plausible than the one preceding, only they mixed cause and effect. That wide nasal fossae alone do not lead to ozena we learn from experience, as B. Fraenkel long since brought out and as we all now know.

The view of Zaufal, that we have to deal with a rudimentary condition of the inferior and middle turbinals, is not recognized by most authors since the investigations of Zuckerkandl. To this theory I can only agree in part, for among the many thousands of children I have examined, I have never seen an instance of this anomaly. And yet we must think of a certain condition existing. I must use this word condition or tendency, although I cannot as yet tell you what it is. But *something* is inherited in these cases just as in tuberculosis, without our being able to clearly define what it is. Whenever a weakness exists in the parents it is often enough present in the descendants.

Rosenfeld reports a family of 21 members, 15 of whom suffered either from ozena or atropic rhinitis. He believes that these cases must be regarded as due to infection—a view in which Cholewa does not agree, believing rather that they were hereditary. From the following history of a similar family, occurring in my practice, I am obliged to think that Cholewa is not entirely wrong.

Mrs. S., a descendant of an old Virginia family, suffered from severe ozena. She stated that her mother and grand-

*Berliner klinische Wochenschrift, p. 554, 1878.
†Deutsche Medicinalzeitung, p. 550, 1886.

mother had been victims of the same disease. Her five children scattered at an early age to the four corners of the earth; her oldest daughter left her home at the early age of twelve. She had only a slight catarrh up to her seventeenth year, from which time up to the present day she has been tormented by the most shocking stench. The whereabouts of the second child is unknown; the third and fourth (both girls) are now married and both suffer from ozena, although they were separated from the mother since their 13th and 14th year respectively. The last child, now a young man of 21, came to me a year ago with an exostosis of the left side of the nose, which completely prevented respiration through that side. I removed it and now he suffers from a pronounced rhinitis atrophica on both sides. A child of the second daughter, a four-year-old boy, was brought to me a year and a half ago with marked adenoids, which were immediately removed. The boy now 5 1/2 years old, shows a clearly defined atrophic rhinitis.

Another grandchild of the above mentioned Mrs. S., 10 years old, suffers from incipient rhinitis atrophica. We have here, then, a family of ten people who did not live together, nine of whom suffer from ozena or atrophic rhinitis, and among these a child of 5 1/2 years with advanced atrophy, such as I have seldom seen in so young a child This all surely argues more for heredity than for infection. But only in this sense can we speak of a *tendency* or disposition to a disease, since a part of the body, debilitated for past generations, as in this instance the interior passage of the nose, will be generated weaker than in an organism born entirely normal, and will more easily fall victim to the habits inherited in certain families

Passing over a number of other theories, we come to the theory of infection and the so-called "Herd" theory. Both offer much that is of value, and both explain, in the most simple manner, the very serious problem of ozena. They free us from so many of the difficulties, the latter even promising us a cure for our ozena patients, that we must be grateful we have at last reached the long-sought-for goal. But, unfortunately, I cannot agree with either of these theories, and later I beg leave to explain my own idea, even at the risk of

irritating, by a new theory, the already highly sensitive and sarcastic brain ganglia of my most honored colleague Grünwald.

I confess it is very tempting when just those men who have done most in the field of accessory sinus disease, as for instance Grünwald and Hajek, came out in favor of sinus disease as a cause. Consequently I watched for years and am still watching for the existence of accessory sinus suppuration in cases of ozena. Very soon I found just such a case, which in short is as follows:

A. F., 10 years old, is the oldest of four children; the other three are healthy. She had measles and a severe attack of scarlet fever, and suffered for the past six months with a bad odorfrom the nose. I found the nose coated with the characteristic scabs, more plentifully on the right side. These having been thoroughly removed, I could ascertain the presence of an empyema of the right maxillary sinus. In addition I found wide nasal fossae, a very marked atrophy of the mucous membrane and turbinated bodies on both sides, and only the middle turbinal of the right side hypertrophic. A foul odor was also present. Under general anesthesia I opened the antrum of Highmore and evacuated considerable ill-smelling muco-purulent fluid. After a thorough scraping of the entire cavity and daily syringing of the same with boric-acid-solution, an astonishing decrease in the odor followed. After eight weeks the secretion from the antrum ceased and I closed the wound. A week later I saw the child again and she presented, on the whole, the same appearance as before the operation, that is unusual scab formation and stench. An examination of the ethmoid cells and of the sphenoidal and frontal sinuses gave no evidence of an empyema, so that I desisted from opening the same. The child, now a year since her first visit to me, feels much better than in the beginning, but this is due solely and entirely to the strict treatment carried out daily by her mother. I am convinced that were we to omit the treatment for one week the characteristic odor would soon return. In order not to lay myself open to the reproach from Grünwald and Hajek, of having made a superficial examination, as has happened to others, I not only did my utmost to be thorough, but was well

pleased when the mother, owing to the hopeless condition of her child, proposed consulting other laryngologists. The earnest efforts of two well-known colleagues altered nothing; the ozena stayed as it was, while the empyema of the antrum of Highmore remained cured.

But perhaps one single case does not prove anything; I always consider the possibility of self-delusion. Anyone to whom the last case is not convincing must ask himself: "Is the rest of the entire laryngological world deceived also, and only the few men who defend this so-called sinus theory, such men as Luc, Guye, Bresgen, Robertson, and especially Grünwald and Hajek, are they alone correct?" Are colleagues like Chiari, Krieg, Cholewa, Cordes and many others still to be accused of superficial research? It is hardly possible for me to accept such a proposition. Nevertheless, I wish to mention the case of Richard,* who proved the existence in one patient of ozena associated with an empyema of the sinus frontalis, and who was able to relieve the latter without being able to change in the least the symptoms of ozena. Certainly these cases indicate that affections of the nasal cavities have only indirect connections with ozena. I can easily imagine that through some external cause, as for instance in rinsing the nose, the secretions might perhaps accidentally reach one of the accessory cavities, stagnate there and arouse a purulent inflammation. The reason this inflammation is almost always a purulent one and not ozenatous lies in the fact that the nasal sinuses, as we will see later, are not sufficiently prepared for the ozena process.

If in reality the sinus affection were the primary cause, the coincidence of both diseases would occur much o tener. Let us assume that the sinus affection is the primary cause in a case of ozena of ten years duration. Can you possibly imagine that the primary seat of affection in the accessory sinus would remain so small, after ten years existence, that it could be overlooked, even by experienced laryngologists? No; when ozena and accessory sinus disease exist side by side, then ozena is the primary cause and the empyema the effect—or, let us say more reservedly, an accompanying condition.

* Revue Hebd. de Laryng., No. 38, 1900. Quoted from J. Wright.

But post mortem findings further disprove the so-called "Herd" theory, not only the earlier researches of Krause, Hartmann, etc., but also the thorough recent investigations of E. Wertheim.* The latter found in the accessory sinuses the usual condition of inflammation, namely, deep-reaching subepithelial round cell infiltration and hemorrhages. "It is hard to believe," he says very properly, "that a purulent process of the accessory sinuses with exactly identical condition of the mucous membrane and the same localization should lead to directly opposing processes in the nose—the formation of polypi—and to atrophic conditions. Furthermore, the process in the nose gave the impression of being much older than the changes in the mucosa of the sinuses." Wertheim never found atrophy of the mucosa of the sinuses. Such facts, in my opinion, should not be overlooked.

As far as the different diagnosis is concerned, I consider it important that the patients themselves, in accessory sinus disease, find the stench exceedingly unpleasant, often before anyone else can detect the existence of the same, whereas the ozena patients are never annoyed by their own odors. This shows that in the former case the filaments of the olfactory nerve are preserved, while in the case of ozena they are already destroyed. In other words, in accessory sinus disease the mucous membrane of the nose is affected secondarily, while in ozena it represents the original seat of the disease. I am aware that arguments might be brought forth against this opinion, but I agree with Jurasz in saying that the subjective perception of smell should not be overlooked.

I am unable to believe that the numerous cases of atrophic rhinitis with the formation of scabs yet absolutely no sign of the characteristic odor of ozena, can have sinus disease as the primary cause. I have seen too frequently, that such cases improve under proper treatment—yes, that the symptoms even entirely disappear under changed hygienic conditions. This never occurs in accessory sinus disease,

Furthermore, I should like to remark, what Rethi has also mentioned, that the fetor in acces ory sinus disease is not at all lessened, or only imperceptibly so, through the use of

*Erkrankungen der Nasennebenhoehlen. Archiv. für Laryngologie, Band XI, 1901.

Gottstein's tamponade, while in ozena it diminishes rapidly. So much for accessory sinus disease.

We now come to the so-called infection theory, which explains these matters more easily, and carries us in the most off-hand manner over all difficulties. There has been much time and trouble given by renowned colleagues to the development of this theory, and I need only to mention names like Loewenberg, Luc, Massei, Klamann, Thost, Perez, Pelaez, Marano, Struebing, and especially Abel, in order to remind you of the earnestness of their researches. Loewenberg deserves the credit of having been the first to work in this field. After him came a succession of others, among whom I wish especially to mention Perez* and Abel.† They all accept as the cause of these peculiar secretions and scab formations, a bacterium which is now universally designated as the bacillus mucosus capsulatus (Abel). Fricke‡ says this bacillus represents a group of bacilli which should be considered as varieties of one species, namely, the bacterium of F iedlaender. That the disease tends to affect adjacent mucous membranes, Massei thinks argues for the contagiousness of ozena. It advances then by means of some auto-infection; for, as is well known, in ozena patients the larynx is also affected, probably owing to the aspiration of the bacilli. There remains no doubt, however, that the process advances not only downward but upward. As proof of this I wish to mention an observation of Maklakoff, Jr.,§ who in affections of the eyelids, isolated from the pus a bacillus very similar to that of the ozena bacillus. At the same time an examination of the nasal mucosa showed the same bacillus.

Now, however, we must not forget that ozena bacilli may be found in different localities without a specific affection

*Fernand Perez, Recherches sur la bacteriologie de l'ozene. Annales de l'Institut Pasteur, No. 12, 1889.

†Rudolf Abel, die Aetiologie der Ozena. Zeitschrift fuer Hygiene und Infektionskrankheiten, Bd. 21, 1896.

‡Carl Fricke, ibidem, Bd. 23, pag. 440.

§A. A. Maklakoff, Jr., Zur Bakteriologie der chron. eitrigen Entzuendung der Glandulae Maibomii des Lides, Archiv. fuer Augenheilkunde, Bd. XLIII. Heft 1.

necessarily existing. One finds them in noses in which neither scab formation nor atrophy is present. And here one can say with Martin Hendelsohn* that wherever Abel's bacillus is found, sooner or later ozena will make its appearance, and so represents a latent form, as for instance in tuberculosis. The justification of this for Koch's bacillus, Hendelsohn continues, has been proven by clinical observation of innumerable cases, which still remains unproven for the coccus of ozena.

I will discontinue the discussion of this part of the subject as later I shall have to renew it, and with your permission will explain more fully my own views.

B. Fraenkel was the first man who tried to prove that there was a connection between the origin of ozena and atrophic catarrh by means of dessicated secretions; in addition to this, there was the specific decomposition of the latter. That is exactly my opinion to-day.

If we consider the first of these causal factors, the atrophic catarrh, we must immediately inquire why the atrophy appears just in the nose and how it is brought about. It seems as if we must answer this question in order to get a clear insight into the essential nature of ozena. Whence, then, comes the atrophy of the entire nasal interior, the bones, mucous membrane, etc.? In the first place, and above all, must be mentioned the influence of our artificially created climate, and especially the warm, dry air we inhale the greater part of the year. This represents the first step towards atrophy. I have explained elsewhere that by climate in this sense, we must not understand the out-door atmosphere, but the artificially produced atmosphere of our dwellings. We must remember that the modern man does not live in the open air, but in closed rooms. And you yourselves, gentlemen, do you not live at least 23 hours of the day in your rooms and on an average of one hour a day out of doors? We will meet with the same deleterious results at the sea shore or in the dry climate of the interior, providing the conditions for the generation of a bad *indoor climate*, if I may call it so, remain the same. Already 26 years ago

*Martin Hendelsohn, Ueber Ozaena, Etc. Monatschrift fuer Ohrenheilkunde p. 330, 1897.

Krieger * showed the irritation leading to disease, or rather to the disposition to disease, which is exerted by the water-absorbing power of an air which is too dry and hot. As far as I know this valuable book has been but little observed, at least no practical results have sprung from it. In fact, I myself have known of it only the last few months, although independently of Krieger, and along other lines, I have made investigations on the deficiency of moisture in our dwellings and have drawn attention to gross mistakes in this matter for fully ten years. If through this renewed appeal I succeed in seeing any practical improvements introduced I shall feel myself richly rewarded. Perhaps in no other country in the world can one make as many investigations along this line as in the United States, especially in New York City, where in winter the houses are heated by means of hot air or its equivalent. I must refer you to my former work, but today I wish to repeat that with our system of centralized heating the air is generally heated in the cellar and at the same time robbed of most, if not all, of its moisture. In this condition it is transmitted to our rooms, where it proceeds to absorb all the humidity there present. The result is that we inhale air whose humidity is abnormally reduced. I have already given many examples and proofs of this and shown that the air in our dwellings *often* contains less than 20 per cent. humidity. In the last few years I have made many investigasions (in a theatre on one occasion, at the end of the performance, there was registered only 12 per cent. relative humidity), of which I will mention only those made at Bedford Sanatorium. This sanatorium, situated in a suburb of New York, a few hundred feet above the village of the same name, meets with all the requirements of modern hygiene. It has large, high-ceilinged wards with numerous and large window , excellent ventilation, etc.—but central heating. Even here the percentage of humidity in the air remains, for the most part, far below normal, as you will see from the tables here appended. (The temperature of the outside air was tested in these experiments only once a day.)

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*Aetiologische Studien (Ueber die Disposition zur Katarrh, Croup und der Diphteritis der Luftwege). Strassburg i-E.

January.	Outdoor Temperat.	Indoor Temperat. Ward No. 1.	Relative Humidity Ward No. 1.	Indoor Temperat. Ward No. 2.	Relativ Humidity. Ward No. 2.	Hour.
4	41° F	62° F	38 per cent	52° F	45 per cent	8 A. M.
		54	42	56	38	1 P. M.
		60	37	55	41	8 P. M.
5	41° F	62° F	41 per cent	48° F	40 per cent	8 A. M.
		60	35	52	38	1 P. M.
		70	28	59	35	8 P. M.
6	35° F	66° F	36 per cent	57° F	50 per cent	8 A. M.
		69	35	52	48	1 P. M.
		65	32	60	30	8 P. M.
8	36° F	68° F	38 per cent	56° F	47 per cent	8 A. M.
		67	22	55	20	1 P. M.
		66	26	56	22	8 P. M.
9	21° F	60° F	22 per cent	43° F	24 per cent	8 A. M.
		62	23	55	21	1 P. M.
		65	26	56	20	8 P. M.
10	24° F	67° F	21 per cent	46° F	22 per cent	8 A. M.
		66	22	56	20	1 P. M.
		68	25	55	20	8 P. M.
11	40° F	68° F	22 per cent	45° F	35 per cent	8 A. M.
		65	25	43	34	1 P. M.
		72	34	62	41	8 P. M.
12	42° F	68° F	22 per cent	47° F	25 per cent	8 A. M.
		60	24	43	28	1 P. M.
		62	23	54	25	8 P. M.
13	20° F	58° F	24 per cent	51° F	23 per cent	8 A. M.
		63	25	62	21	1 P. M.
		64	25	48	22	8 P. M.
14	23° F	64° F	25 per cent	48° F	22 per cent	8 A. M.
		65	24	56	23	1 P. M.
		68	24	60	20	8 P. M.
15	35° F	66° F	26 per cent	50° F	25 per cent	8 A. M.
		67	26	52	28	1 P. M.
		64	29	58	31	8 P. M.
16	40° F	66° F	30 per cent	53° F	35 per cent	8 A. M.
		72	28	62	30	8 P. M.
17	35° F	57° F	38 per cent	53° F	34 per cent	8 A. M.
		64	35	58	41	8 P. M.
18	25° F	55° F	28 per cent	48° F	26 per cent	8 A M.
		65	22	59	24	8 P. M.
19	20° F	62° F	22 per cent	35° F	26 per cent	8 A. M.
		63	23	58	41	8 P. M.

20	34° F	62° F 66	25 per cent 30	38° F 50	25 per cent 24	8 A. M. 8 P. M.
21	34° F	62° F 60 75	64 per cent 59 30	57° F 55 58	70 per cent 66 29	8 A. M. 1 P. M. 8 P. M.
22	47° F	58° F 55	38 per cent 39	50° F 57	43 per cent 33	8 A. M. 8 P. M.

Since a short time we have had, in the above mentioned sanatorium, a tent in which, by the way, the patient felt unusually comfortable even during severe weather. Now I had measurements taken at the same time in this tent and in one of the wards of the main building. The results were so striking that I cannot withhold them from you.

February.	Hour.	Temperature.		Relative Humidity.	
		Ward.	Tent.	Ward.	Tent.
1st	4 P. M.	60° F.	36° F.	40 per cent.	96 per cent.
2nd	8 A. M.	66° F.	35° F.	38 per cent.	93 per cent.
2nd	12 M.	66° F.	38° F.	39 per cent.	92 per cent.
2nd	4 P. M.	68° F.	40° F.	39 per cent.	90 per cent.
3rd	8 A. M.	68° F.	36° F.	32 per cent.	75 per cent.
3rd	12 M.	68° F.	50° F.	32 per cent.	45 per cens.
3rd	4 P. M.	67° F.	47° F.	32 per cent.	45 per cent.
4th	8 A. M.	65° F.	38° .	37 per cent.	95 per cent.
4th	12 M.	66° F.	40° F.	43 per cent.	95 per cent.
4th	4 P. M.	66° F.	40° F.	40 per cent.	95 per cent.
5th	8 A M.	66° F.	28° F.	35 per cent.	53 per cent.
5th	12 M.	57° F.	30° F.	31 per cent.	43 per cent.
5th	4 P. M.	58° F.	30° F.	32 per cent.	45 per cent.
6th	8 A. M.	64° F.	30° F.	29 per cent.	59 per cent.

6th	12 M.	57° F.	30° F.	30 per cent.	40 per cent.
6th	4 P. M.	63° F.	35° F.	20 per cent.	44 per cent.
7th	8 A. M.	70° F.	30° F.	35 per cent.	60 per cent.
7th	12 M.	66° F.	34° F.	25 per cent.	45 per cent.
7th	4 P. M.	64° F.	36° F.	23 per cent.	39 per cent.
8th	8 A. M.	66° F.	30° F.	36 per cent.	70 per cent.
8th	12 M.	64° F.	35° F.	40 per cent.	96 per cent.

Further measurements, which I will not detail, have also shown a marked difference in the moisture of the wards and in the tent. It amounted on the average to about 30 per cent. This difference was greater on rainy or very cold days, when the windows had to be kept closed most of the time, and less on clear, warm days. When, owing to the prevailing scarcity of coal, they were obliged, for a time, to do without heating, the difference in the quantity of moisture in the wards and tent was reduced to a minimum.

These are the conditions in an absolutely hygienically equipped sanatorium. But how much worse it is in our dwellings and especially in the sweat-shops and homes of the poor! Now it is obvious to every one that if we inhale an atmosphere which contains only 30 or 20 per cent. relative humidity, or still less, instead of 60 or 70 per cent., this same air will very soon absorb the moisture from our own respiratory organs. The upper air passages will show the effect first—namely, that the surfaces of the mucous membrane will dessicate quickly. A considerable amount of water is taken from the latter; in the beginning this is furnished in the secretion of the mucous glands and then from the cells themselves. "That the delicate cells of the mucous membrane, lining the respiratory organs, should remain insensible to the moisture-absorbing property of the air is the less easily believed from the fact that the more resistant cells of the epidermis are capable of absorbing water as well as of giving it off. Microscopic observation teaches us how quickly cells

with ameboid motion can be killed through dessication." (Krieger) That is what happens in the nose and throat. The secretion dries up, the ameboid action of the epithelia ceases and the solid masses ordinarily removed by them stagnate.

We have consequently a dry rhinitis with or without scab formation, such as I could produce experimentally in any one of you under given conditions. But such conditions are often found in winter without atrophy necessarily resulting; in summer such mucous membrane may go back to the normal condition. In cases subjected to frequent, prolonged and powerful influences of too warm dry air, the affected parts will not recover but will fall gradually into atrophy.

Most authors, and recently Cholewa, conceive this process very differently. The latter, for instance, believes that the glands of the mucous membrane would produce another than normal secretion if they, as is here the case, were surrounded by a half stagnated and consequently richly venous, blood current. It is similar with the lymph system. The escape of the fluid through the lymph ducts is very much hindered if not entirely stopped by the formation of flat epithelium.

This is all true, but what causes the formation of flat epithelium? It is the lack of fluid in the respiratory air. Through this the superficial layers of the mucous membrane dry up and formation of flat epithelium follows. This once present, the glandular secretions stagnate still more and the production of the over-charged cell corpuscles, the twisted excretory ducts and the greatly enlarged funnels opening into the surface of the mucous membrane are all simply secondary phenomena caused by the stagnating secretion.

M. Schmidt ascribes the cause of scab formation to a dry and dusty air. He believes that that is induced more often by the addition of an unknown element, which he compares to the "siccative" which painters mix with their colors and which is most prevalent in the dusty air of a dry spring. I showed years ago that dust plays a most unimportant role, or perhaps none at all, in this matter. But to me, who have studied the local condition in New York, it is incomprehensible why we have to search for a special "siccative." The dried up air of our dwellings is such a frightful "siccative"

that it is quite unnecessary to look around for any other. This "siccative" once established, we will be able to explain many phenomena whose explanation otherwise would cause us much difficulty.

Years ago I believe I showed how a post-nasal catarrh originates * under the above conditions. I believe still that the naso-pharynx is always primarily affected, among other reasons because it is here that the air current experiences a whirl movement and absorbs more moisture from the mucous memb ane than in other parts of the upper air tract.

If the naso-pharynx is once affected then the nose will also become affected, or, in case of mouth breathing, the pharynx. In the first case we have a rhinitis sicca, and in the latter a pharyngitis sicca, both of which finally lead to atrophy. That all parts of the nasal interior are not affected in the same way and at the same time is evident enough. Therefore it is not clear to me why Siebenmann and Ribary believe that they have discovered a new disease, the rhinitis sicca anterior. Ribary† finds furthermore that the ciliated epithelium of the cartilaginous septum is changed into flat epithelium and argues, since this occurs also in rhinitis sicca anterior, that this should be classified under rhinitis atrophica restricted to the septum, and this all the more because here also atrophy appears in the progress of the disease. For this last reason alone I am unable to classify rhinitis sicca anterior as a separate disease. It is if anything, the incipient or one of the incipient stages of general atrophic rhinitis.

Now, the cartilaginous septum is the very place most prone to hemorrhages. Many authors account for this "by the unusual thinness of the mucous-membrane-coating in those parts, by its tight adhesion to the cartilage, which should prevent the contraction of the vessels if they are once even superficially eroded;" furthermore, abundance of the blood vessels of the septum, etc. However all this does not happen; because the mucous membrane of the septum is not richer in blood than the covering of the turbinals and

* W. Freudenthal—Some points regarding the Etiology of Post-Nasal Catarrh. Journal of the Am. Med. Assn., Nov. 9, 1895.

†Klinisch-anatomische Beitrage zur Rhinitis sicca anterior. Archiv. fuer Laryngologie, Bd. IV., pag. 301.

not thinner than the mucous membrane of the rest of the nose; also not more tense. The cause of bleeding seems to Ribary that the anterior part is much more exposed to injury, especially when scab formation is present.

He says furthermore, "Siebenmann was the first to define the dry catarrh (to which he gave the name rhinitis sicca anterior) as the principal cause of the benign perforating ulcer of the septum."

This last opinion I hold as the most important. It is the dry catarrh, call it as you will, anterior or posterior, that makes the mucous membrane fragile; and a slightly vigorous blowing of the nose is sometimes sufficient to cause bleeding. In cases of atrophic rhinitis during the winter, bleeding from the anterior parts of the septum is extraordinarily frequent, and the reason that just these parts bleed is that the cartilaginous septum is movable, and even slight movement of the same toward the right or left in nose-blowing causes a tear in the fragile mucous membrane and bleeding. If besides, in the intervals, the patient bores in the nose with the finger, we finally get an ulcus septi nasi perforans, such as I described twelve years ago.*

Cholewa and Cordes, whose most valuable contributions to the ozena question are familiar to you all, claim that the bones are first attacked by atrophy—a theory which would seem, after their thorough investigation, to have much in its favor. According to my idea, however, I must retain the belief that the physical influences work from without inward, and therefore that the mucous membrane is affected first and the bones only later. I think, though, that the mucous membrane is often at least partly regenerated, under changed atmospheric conditions, while with the bones this is not the case. I reached this conclusion after finding frequently that noses which in winter present clinically a typical picture of atrophy, looked entirely different in summer or even in winter, after proper treatment. It seemed as if the corpora cavernosa had suddenly appeared there again. Naturally, where a fully developed atrophy has been present, no recuperation is possible, but these cases are comparatively rare.

*W. Freudenthal—"Ueber das Ulcus septi nasi perforans." New Yorker Medizinische Monatsschrift, May, 1891.

Let us pause a minute and ask: "Are the organs of respiration the only ones in the human system that suffer from the water-absorbing property of the air, or has it an influence in other directions?" A short consideration will bring to mind a number of new facts which I wish to introduce here, principally to furnish further proof of my views.

In what manner does the artificial climate which prevails in our houses, especially its dryness, influence our system? Let me begin at the top and mention here in the first place

EARLY LOSS OF HAIR, COMMON BALDNESS.

In this connection I shall not refer to such diseases of the hair as occur in connection with favus, herpes tonsurans or those caused by acne, variola, lichen ruber, etc. I shall likewise omit the discussion of baldness so frequently met with in the course of general diseases such as typhoid, scarlatina, syphilis, puerperal fever, etc. In my theme the subject in which I would enlist your interest is the idiopathic early effluvium pilorum, in which a distinct disease of the hair cannot be found.

What are the causes of this so frequent abnormality? Many authors in discussing the diseases of the hair omit entirely the etiology, while others bring forth a mass of theories which have little to commend them to consideration. Allow me to direct your attention for a moment to an article by Seeger * of Vienna. He believes that the head covering of men, in whom baldness is so frequent, is much more unhygienic than that of women, in whom it is much rarer. The first is heavy, stiff and tightly fitting, permitting very little or no air and light to pass through. In addition to this, whenever the wearer of such a hat perspires, the sweat being prevented from evaporating collects on the scalp and of itself gives rise to nutritive disturbances. All these factors finally lead to atrophy.

Although these ideas are based upon very accurate observations, the conclusions drawn from them do not seem equally established. If this stiff covering for the head really produces atrophy by pressure, then this atrophy should be noticed

* Ludwig Seeger—"Studie ueber vorzeitige Kahlheit," Wiener Klinik, Dec., 1892.

first at those places upon which the pressure is exercised. This would be in a line commencing a little over the temples and extending around the head (posteriorly below the occipital protuberance) to finally return to the front. Now this is by no means in accord with our experience, since in reality the loss of the hair commences at a place almost invariably situated within the crown of the hat and never is exposed to its pressure. You surely have never seen a baldness that has commenced where the hat pressed on the head. No, indeed, the causes have to be sought in another direction, and I do not believe we go wrong if we regard the dryness of our artificial climate as the real cause.

The covering of hair has been given to us by nature for two reasons: first, it acts as a poor conductor of heat, thus protecting head and neck against too intense cold as well as the too strong rays of the sun; second, on account of its hygroscopic properties. For this latter reason hair is just as necessary for the human economy as the preservation of forests for nature's greater household. Forests bring about the equilibrium of heat and humidity in nature, supply rivers and brooks with water and afford protection against the burning heat of the sun. The rooting out of forests that has been and is still going on in some parts of the country in an outrageous manner, has already been followed in these sections by deterioration of the climate, lack of water, etc.

In its relation to the human being the hair serves the same purpose as the forests. We know that the hair possesses to a marked degree the quality of attracting moisture energetically from the atmosphere and of giving it off readily. Upon this quality is based, as you know, the principle of the hair hygrometer. Now this property is being systematically suppressed by us and even destroyed. The hair is cut short from early youth and arranged in conventional form, in which it is kept by means of pomade, oil, etc. When the boy grows, very soon school work commences and he has to sit for hours in the evening directly under the rays of the gas or electric light, which has the effect of drying out everything, and naturally that nearest to it first of all. This fact I consider most important in the etiology of the early loss of hair. The heat that is thus thrown on our heads is sometimes enor-

mous. In this way the hair gives off every particle of humidity and may do so for years without detriment. Then, however, under this continued occupation under the direct rays of gas or electric light—and most brain workers like to study best at night time—what will follow? Just as in other parts of the body, here too an atrophy will set in and the follicles, papillae of the hair and the peripheral nerve ramifications are destroyed. The process that goes on here is, I believe, exactly identical with that observed on the mucous membranes. In order to compensate for the marked lack of humidity, the secretion of the sebaceous glands of the scalp is abnormally stimulated and in reality the resulting seborrhea, i. e., the excessive production of the sebaceous secretion, is nothing else but the first step of baldness.* Not until later, after this seborrhea has persisted for a long time, do the dried masses of sebaceous matter and epidermic scales become detached, the transformation of the cells of the so-called hair pulp into hair substance decreases, the hair of the crown begins to fall out and (sometimes) persistent baldness sets in.†

Now, it is not necessary for any one to be a brain worker in order to become bald headed. Every vocation in life that forces a man for a very long time to the artificially illuminated desk or working table, will produce the same result. It is true that formerly only the student and writer had the privilege of working in this unhygienic manner and drying out slowly. Now-a-days, however, especially in large cities, many thousands have to work under artificial light, even in day time. You surely know as well as I do the many bookkeepers, for example, who almost through the entire winter have to work all day under gas or electric light. Look at these people and you will be surprised to see how often you find this affection among them.

Women who are exposed to the same work will finally suffer the same consequences. But these will not be nearly so bad as in men for two reasons: First, the loosely worn hair of

* See Max Joseph's article on Alopecia in "Lesser's Encyklopaedie der Haut und Geschlechtskrankheiten." Leipzig, 1900.

† Isidor Neumann—"Lehrbuch der Hautkrankheiten." 5 Auflage, p. 428. Vienna, 1880.

women contains much more humidity and will thus resist the drying process of the gaslight much longer, and, second, outdoors it can take up much more humidity from the air, since it is not plastered together. In men this is not possible, for the very places exposed to the artificial light are those constricted by the tightly fitting hat. These places are by far the most commonly affected, while those not enveloped in the head covering, especially the neck and beard, generally continue to grow luxuriantly.

What are these white dandruff-like masses that come off so early in combing the hair; what else are these dry sebaceous masses and epidemic scales, but formations analogous to the dried crusts and scabs of the nasal and pharyngeal mucosa? The process is here as elsewhere exactly identical—that is, in the early stages there is a state of hypersecretion, then of dryness and finally atrophy.

CERUMEN.

Let us go a step further and we meet with a less striking and important condition that etiologically belongs to the same category, viz: cerumen.

This anomaly also appears in the text books under the chapter "hypersecretion." In discussing it we shall, as before, pay no attention to anomalies of the external canal of the ear, to improper cleansing of the latter, etc., but shall speak only of the *idiopathic* accumulations of ear wax, if I may use this term.

The cerumen or the combined product of both the ceruminal and sebaceous glands, is secreted continuously under normal conditions, in some cases more abundantly than in others. This tenacious, rather smeary fluid does not stagnate normally, but is removed, according to Buck* by the action of the outer layer of the epidermis lining the meatus. This epithelium has the property of moving from within outward, thus carrying the cerumen with it out of the meatus. The cerumen becomes inspissated in the meatus only when the fluid contents evaporate quickly. Then a more consistent mass remains that can be no longer removed by the action of the epithelium. Once a nucleus is present, more solid

*Manual of Diseases of the Ear. New York.

masses gather round it and soon the impacted cerumen is there.

To treat this process under the heading of hypersecretion is, as I have said before, not correct. Under the conditions mentioned at the beginning of this paper, the fluid contents of the material secreted by the glands of the meatus externus evaporate quickly. The dryness of our rooms not only affects the nose, throat and hair, but in exactly the same manner the ear. In the beginning of this process nature here too will provide for the increased demands for humidity, and the glands consequently will be stimulated to increased activity. At first we get a hyperemia and hypersecretion, that, however, is only transitory Slowly, however, nature's auxiliary forces become exhausted, and the overstrained glandular apparatus has reached the end of its function. The glands shrivel and become atrophic and we have the same process as observed in the pharynx, nose, etc.

That the hypersecretion alone could not be held responsible for the production of impissated cerumen, was already known to Buck. He, too, noticed very often the presence of cerumen associated with nasal and pharyngeal catarrh, but explains the former as a reflex phenomenon, a view in which we cannot coincide. Buck as well as Pomeroy and a few others have recognized that there is some connection between cerumen and affections of the nose and throat, but how this occurred, the modus operandi was unknown to them. I hope I may be able to convince you that both are natural consequences of one and the same cause.

That occasionally you find impacted cerumen that is not hard and dry, but rather soft and saturated with fluid, speaks just as little against my theory as the often noticed fact that many people feel the presence of ear wax more in summer. In the former case water got into the ear during washing of the face, in the second through swimming In swimming generally a good deal of water enters the ear and the wax becomes soaked, a fact which perhaps you may have noticed on yourselves.

Frequently, however, you see whitish-yellow scales formed in the meatus, and these are nothing but dried epidermic cells For several years I watched in my private practice

the occurrence of these masses and found them more frequent in winter than in summer, and quite often in patients with post-nasal and similar "catarrhs." Just during this season the atmospheric conditions favor such desiccation. The complaints in summer, as far as I recollect, even in susceptible patients, were decidedly less frequent. Even if they did not take sea baths, the difference between the influence of summer and winter upon their condition was very marked.

One more point is of importance here. It is the general consensus of opinion that the accumulation of cerumen is principally an affection of men. According to Buerkner* there were about 818 cases of impacted cerumen at his clinic in Goettingen, 630, or 77 per cent. in men and 188, or 23 per cent. in women. Is this marked difference between the two sexes not astonishing? Are we not directly forced to think of the protection their hair confers upon the females? Who, on the other hand, does not think here of the similarity of causes that exists between the destruction of forests and the loss of hair in its pernicious effects?

During the month of March, 1902, I examined the inmates of the Bedford Sanitarium for Consumptives. There were present 67 male and 41 female patients, or a total of 108. Only a few of them really complained of their ears, but they were all examined. I found inspissated cerumen in one or both ears in 28 male and 12 female patients. In other words, out of 108 patients 40 had cerumen, or two out of every five.

Early in November, 1902, I repeated these examinations on all inmates who were able to come downstairs to the clinic, nearly all of them being new arrivals and not figured in the former statistics. There were present 122 patients (84 male and 38 female). Inspissated cerumen was found in 32 cases (27 male and 5 female), or in almost every fourth patient. We see from these figures that the number of patients suffering from this affection was much larger in March i. e., at the end of winter (40 out of 108) than in November, at a time when the cold weather had hardly set in (32 out of 122). Should we not consider this result as the natural effect of the artificially heated winter air in our rooms? I must remark here that in March, 1902, the sanatorium having

*"Lehrbuch der Ohrenheilkunde." Stuttgart, 1892, p. 89.

only been opened a short time, the inmates had not received the beneficial effect of fresh country air sufficiently.

XERASIA.

There remains no doubt in my mind that all these phenomena are to be ascribed to one cause, which I wish to include under the common name xerasia. I chose this name according to the suggestion of Dr. A. Rose, an excellent Greek scholar. I do not use the word xerosis as it is employed in ophthalmology, because this term means something else (xerosis conjunctivae and corneae). Whether this disease, xerasia, as well as the one known as xeroderma simplex, do not belong to the group of xerasiae is a question I do not wish to decide now. Further investigation in this field would surely be of great interest.

There remains the discussion of a question which has not yet been answered, namely, whence comes this increased secretion? How can one reconcile an atrophic mucous membrane with this plentiful secretion, as the followers of the accessory sinus theory say? It is an impossibility to assume that a mucous membrane, whose organs of secretion are almost destroyed, will secrete more than normally. He e, undoubtedly, is a great objection to the theory of primary nasal involvement, yet the contradiction is only apparent. In reality these mucous membranes do not secrete more than normally, but the accessory conditions have changed. The secretion discharges itself just as usual into the mucous membrane. but the receptacles for it—the glands, etc.—have in a great measure disappeared—so where can it go? It can not evaporate from the surface, since there is a dry mass (crusts, etc.) there, which prevents this. It remains therefore in the same place, and under such favorable conditions decomposes with the greatest ease. We have an analogy in the retro-nasal catarrh. Here, also, we have an apparently increased secretion, which in reality signifies just the opposite condition.

One could mention another example—baldheadedness. Take a man with a pronounced bald head. When for any reason such a man becomes overheated, you will notice that the beads of perspiration form on the spots where there is

least hair. He perspires in such places first, and much more visibly than in the parts covered with hair, and yet the hair follicles and papillaë are lacking there. So also in this atrophic condition, there is a seemingly increased secretion. The reasons are the same as above: The metabolism is the same in the covered as in the bald spots and the secretion discharges itself *caet.ris paribus* everywhere equally; on the normal skin and mucous membrane it is retained, but over the destroyed parts it flows freely.

I wish to recall here the numerous productions of scabs and crusts in luetic affections of the nose. There are cases where the luetic destruction has gone so far that we can see into the entire maxillary sinus, etc., and still there is considerable secretion. Surely in these cases we cannot speak of a sinus suppuration. It is perhaps only a further confirmation of the fact that where the secretive power of the mucous membrane is entirely or partly destroyed, scabs and crusts must form.

Now, as a general thing, the secretion as well as the general metabolism is greater in young people than in old. This perhaps explains the fact that in elderly people, often already in their 45th year, the secretion from the nose ceases, and with it the symptoms of ozena disappear. If we are convinced that there is no hyper-secretion then it is absolutely unnecessary to take for granted, as many do, that the ozena-affected mucous membrane gives forth a secretion which is not entirely complete, "one which lacks that chemical substance which gives to the normal secretion its bactericidal property." The secretion discharges itself as usual, evaporates however so quickly that the solid elements cannot be removed, but adhere to the mucous membrane. New quantities of fluid are discharged, which however, under the pressure of the solid masses, must stagnate. Now this stagnating secretion is decomposed and smells—and we have a fetor from the nose and from the retro-pharynx, just as we might have from the stomach, the uterus or from any part where pus decomposes.

But to create the special odor of ozena, one more thing is essential, and that is Abel's bacillus. Although I wish to maintain the above-mentioned consideration, the fact cannot

be denied that in the many cases of ozena I have examined, I have invariably found the bacillus capsulatus, while it is equally important to note that in accessory sinus disease I have *not always* found it. The bacilli were so plentiful in some cases of ozena that one could imagine it was present in pure culture instead of a secretion taken directly from the nose. Dr. H. Schwarz, of New York, who made several examinations for me, confirmed this.

But since Abel's bacillus is found in normal noses and even in hypertrophic conditions, without there being a trace of odor noticeable, we are forced to the conclusion that there must be a preliminary condition leading to the accomplishment of the ozena-picture—namely, atrophy of the nasal interior.

How is it that ozena is most often found in women? It seemed to me that I could answer this question after noticing the following:

A three-year old girl was brought to the hospital with an acute infectious disease. After two weeks she developed an acute otitis media purulenta, and I saw her then. Two or three weeks later the house physician told me that since a few days the child had had a discharge from the vagina. This discharge was examined and found to be identical with secretions from the ear. After repeated and thorough examinations, gonococci were not found. It was evident that the child herself had transmitted the infection from the ear to the vulva. This case gave me subject for thought, because, said I, if such a transmission is possible, cannot the opposite be true; i. e., that the infection might be carried from the vulva upward, especially to the nose, by means of the fingers? Peculiarly enough, I found two patients soon after, a girl of 14 and a woman of 30, who had the bacillus capsulatus in the vulvar secretion, which spoke strongly in favor of my assumption. Since then I have seen ten other cases, but (unfortunately ?) Abel's bacillus could not be found in the vaginal secretions. We must therefore await further investigation in this line.

We are not in a position to-day to state how these bacilli lodge themselves in the nose and aid in producing the picture of ozena. We will, however, not forget that one must not

immediately diagnose ozena whenever Abel's bacillus is found, any more than we would diagnosticate tuberculosis if we found a few tubercle bacilli in the nose, or diphtheria every time Loeffler's bacillus was found in the pharynx.

Finally, I must confess that in the last few years I have seen a few cases, which formerly I should have diagnosed as ozena without the least hesitation; repeated and thorough examination showed a sinus suppuration. I do not hesitate right here to express my gratitude to the gentlemen who have so energetically defended the accessory sinus theory. Unfortunately, such findings were exceptional in my cases.

FINAL CONCLUSIONS.

1. Ozena is an atrophy of the nasal interior, which is conditioned by atmospheric influences—Xerasia.

2. The bones of the turbinated bodies appear to be affected at an early period of the disease.

3. The effects of lack of humidity in the air are appparent in all parts.

(a) Of the nasal interior, including diseases which were formerly looked upon from a different point of view, as for example, ulcus septi nasi perforans, the rhinitis atrophica anterior, some forms of epistaxis, etc.;

(b) Neighboring parts of the body (scalp, ears, lips, teeth);

(c) Probably also in distant organs.

4. In order to convert this atrophy into ozena, the plentiful invasion of a bacillus, similar to Friedlaender's pneumobacilli, is necessary.

5. This invasion occurs in an early period of life and is caused, perhaps in some cases, by direct transmission from the vulva.

6. Accessory sinus disease often appears as secondary to ozena.

7. Arter all has been said, ozena is to be considered as a genuine and autochthonous disease, resulting from atrophy of the nasal interior.

XIX.

AN UNUSUAL CASE OF FRONTAL SINUSITIS. ABSENCE OF THE SEPTUM.*

By C. G. Coakley, M. D.,

NEW YORK.

At the present time, when the diagnosis and treatment of diseases of the accessory sinuses are occupying a prominent place in the daily work of all rhinologists, it seems fit to record a case which departs from the typical anatomical appearances. We take pleasure in presenting the following case:

PREVIOUS HISTORY.

Mrs. A. B., aet 62, weight 97 lbs., U. S. Had always enjoyed good health with the exception of slight attacks of malaria and an attack of grippe in 1898. Had never had any nasal obstruction or hypersecretion. About July, 1899, she suffered considerably from frontal headache, which ceased in a few weeks. In January, 1900, there was noticed a bulging above and to the inner side of the right eye, which was accompanied by some throbbing pain. At the end of a week the mass was the size of a filbert and the eyeball was displaced downward and outward. Vision was not interferred with—no diplopia. It opened spontaneously on Jan. 28, 1900, about half an inch above and to the inner side of the inner canthus. The discharge consisted of thick yellow pus, having a slightly offensive odor. There was no discharge from either naris, nor any from the posterior nares. She consulted a well-known eye specialist in a city near her home, who probed the fistulous tract, but did not at that

*Presented to Ninth Annual Meeting of the American Laryngological, Rhinological and Otological Society, Lexington, Ky., April 30, May 2, 1903.

time wash out the cavity. The purulent discharge not having abated, she came to New York in October, 1900, and consulted the late Dr. Noyes. A physician who was present at the consultation told me later that Dr. Noyes passed a probe through the the fistula outward to the left to a point beyond the middle of the left orbit. Mrs. B. was advised to return home and put herself in the hands of her oculist for a radical operation on the frontal sinus.

The latter part of October, 1900, the fistulous opening was enlarged under ether, a portion of the anterior and inferior bony wall of the right frontal sinus was removed and the cavity curetted. There was no drainage inserted through the naso-frontal duct. The cavity of the sinus was packed with gauze, which was renewed daily for five or six months. There was no nasal discharge during this period. Packing was then discontinued and simple washing of the sinus resorted to. Fluid injected through the external wound passed very readily through the right naso-frontal duct and appeared at the right nostril. None came out of the left nostril. This irrigation treatment was continued daily for about a year until she was referred to me by Dr. J. P. Munn, of this city, January 18, 1903.

EXAMINATION.

I found a small fistula above the inner canthus of the right eye, at about the junction of the horizontal and vertical portions of the frontal bone. The right middle turbinal was much swollen and reddened, touching both the outer wall and the septum. A probe passed between the outer wall and the middle turbinate encountered a soft pulpy mass, which bled freely. With the middle turbinate intact, it was impossible to tell what this mass was or to pass a catheter into the frontal sinus. The mucous membrane of the left nasal cavity was normal. The left middle turbinate stood well away from the outer wall, and no secretion was visible. Transillumination of the antra gave perfect illumination on each side, and the patient's sensation of light in each eye was abundant and equal. On transilluminating the right frontal sinus there was practically no illumination, and a similar procedure for the left frontal sinus showed the same as on

the right. Under cocaine, I removed the hypertrophied anterior end of the right middle turbinate. The soft mass was seen to be granulation tissue springing from the region of the bulla and anterior ethmoidal cells. The diseased tissue was removed by forceps and curette, the underlying ethmoidal cells were found filled with pus and polypoid degeneration of their lining mucosa. The diseased cells were all cleaned out intra-nasally at two sittings prior to operating upon the frontal sinus. A catheter was now passed through the right naso-frontal duct into the frontal sinus. The diagnosis made was chronic empyema of the right frontal sinus with probable involvement of the left. The patient was advised to have the left sinus explored first on the ground that if it were not diseased it could be closed and danger of iufection thus averted. To this she consented.

OPERATION.

On January 24, 1903 , under chloroform anesthesia an incision was made along the middle of the left eyebrow, which had previously been shaved. With chisel and mallet a few strokes entered the frontal sinus and thick yellow pus exuded from the opening. The opening was enlarged to about half an inch in diameter. A probe showed the cavity to extend outward to the left to nearly the external margin of the orbit, while toward the median line the probe passed without any resistance to the right of the middle of the right orbit. The cavity was filled with polypoid degeneration of the mucous membrane. This opening was enlarged externally until all parts of the cavity could be curetted and explored by direct illumination. A similar opening was made through the anterior wall of the right frontal sinus. A bridge of bone in the center of the forehead, one inch wide, separated the two openings. No trace of a septum, not even a ridge, could be found indicating the position of a septum between the two sinuses. A posterior offshoot in the median line formed a cavity, like a third sinus, fully 3-4 of an inch deep anteroposteriorly and half an inch wide. Every trace of mucous membrane was removed from the sinus cavity and the nasofrontal ducts. The duct apparently was as well marked on the left as on the right. There was no trouble in passing a

probe through each duct into the nose, at least I was not aware of any obstruction or using force in entering the left nasal cavity. What to do with the median posterior offshoot gave me no little concern. The safest procedure for rapid healing would have been to cut across the lower and upper parts of the bridge of bone and allow the piece, with its periosteum attached, to fall back into the sinus, thus filling the gap in great part. Hajek* recommends this method highly. The anterior bony wall of the sinus was so thin I feared the deformity would be very great, so contented myself with packing the entire cavity with two strips of 5 per cent. iodoform gauze, packing half through one opening and half through the other. We began by packing the naso-frontal duct first. The operation lasted 1¼ hours.

The patient, in spite of her age and frail appearance, stood the operation well. Her highest temperature was 99.6° by rectum. The gauze packing was not removed for *two weeks*. There was no discharge and no temperature, therefore no necessity for removing the packing earlier. The sinus could be seen completely lined by granulation tissue. Probe detected no bare bone. At that time I irrigated the cavity with normal saline solution to determine whether the naso-frontal duct was occluded. It was found to be so, no fluid passing into the nares. The cavity was wiped dry and repacked. Subsequent packings without irrigation were at intervals of six to eight days. Mrs. B: left the hospital at the end of the third week and went out driving and walking. About the middle of March she had an attack of grip and malaria, her temperature going to 104°. This apparently did not interfere with healing or increase the discharge. A remarkable feature of the case is that the amount of discharge all told has not been three drams. At the present time, April 24th, the left cavity is filled up completely and the left opening closed for two weeks; likewise the median cavity all but a small tract about 1-8 of an inch in diameter and 1-3 of an inch long. This will probably be closed in two or three weeks at the present rate of healing. There has been no nasal or post-nasal secretion during the healing.

*Pathologie und Therapie der entzundlichen Erkrankungen der Nebenhohlen der Nase, 2nd Eidt., p. 189-190.

REMARKS.

The interesting features of this case are the absence of the septum, the large size of the sinus, and that healing took place in it without the necessity for resection and an osteoplastic operation.

It occurs to me that there are but three explanations for the absence of the septum in this frontal sinus.

I. It was destroyed as a result of the long-standing suppuration.

II. It is an example of congenital absence of the septum.

III. We have to do with a single sinus developing from the right naso-frontal prolongation from the nose and spreading out over the left frontal region.

Concerning the septum between the frontal sinuses the following observations are interesting and instructive.

Turner* says: "I have never found it incomplete in the normal skull, although this does not agree with all observers."

Tilley† says: "Specimen 20 is the only case of all examined in which on opening the sinuses the septum was found incomplete, but from the shape of the aperture I am inclined to think it was a traumatic opening."

Lothrop:‡ "With remarkable constancy, on account of its often delicate structure, this septum is usually complete, so that there is no communication between the sinuses. An examination of 180 specimens has revealed two examples, one an oval perforation near the center of the septum, the other its almost entire absence." He gives a cut of this in Plate 55.

In a letter to Dr. Lothrop I inquired whether there were any evidences that this was a result of disease. He very kindly replied: "The specimen to which you refer was a developmental anomaly. The nasal fossae and sinuses showed no pathological processes. The specimen was an interesting one to me."

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*A. Logan Turner—The Accessory Sinuses of the Nose, p. 20.

†Investigations of the Frontal Sinus in 120 Skulls. Lancet, 1896, p. 867.

‡Howard A. Lothrop—The Anatomy and Surgery of the Frontal Sinus and Anterior Ethmoidal Cells, p. 13.

Hajek* says: "Defects in the septum of the frontal sinus are considered to have been observed, yet only on macerated bones. * * * The destruction of the septal wall in consequence of disease does not belong to this category."

Sieur et Jacob:† "Usually of extreme thinness, presenting gaps at times, the septum could not oppose, to an active suppuration of long standing, a serious barrier." And in a foot note they remark: "Personally we have never encountered a gap in the septum."

Hartmann‡ does not mention an absence of the septum except in the case of a frontal sinus developing from the right side alone and extending in the frontal bone over both the right and left supra-orbital regions. There was no communication of the sinus with the left nasal cavity.

Turner§ says: "In two instances I have seen a single sinus occupy the whole frontal area immediately above the root of the nose, and extending from one supra-orbital margin to the other. In one case the cavity was the right, and the other the left frontal sinus, and in each instance the sinus communicated by a single orifice with the nasal chamber of one side."

I. Under the first supposition, viz., the septum destroyed as a result of the disease process, we must not forget that there must have been considerable tension within the sinus to result in necrosis of the inferior wall at its thinnest part which resulted in a fistula. The same tension might easily have produced a similar necrosis in the septum and made a communication between the sinuses, but scarcely its total destruction. Before any operation Dr. Noyes had passed a probe beyond the median line to the left of the middle of the orbit. I found the sinus on operation still further to the left. Considering the small size of the opening made at the first operation, it is unlikely that the septum was all curetted away at that time so as to leave no trace, as I am informed that the mucous membrane was not completely denuded from the right cavity at that operation.

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*Hajek, *loc. cit.*, p. 134.

†Sieur et Jacob—Recherches anatomiques, cliniques et operatives sur les Fosses Nasales et Leurs Sinus, p. 406.

‡Hartmann, Atlas der Anatomie der Stirnhöhle, p. 19.

§Turner, *loc. cit.*, p. 26.

Tilly* reports a most instructive case of double frontal sinusitis in which at the operation he found a perforation of the septum, Whether made by himself during the operation or as a result of the disease he could not say. He curetted both sinuses through a single opening to one side of the median line. The discharge lasting a long time, he decided to operate again, opening on both sides of the median line. He found the sinus in which the first opening was made in good condition, but the other badly diseased. He remarks that "it is impossible to thoroughly deal with both frontal sinuses through an opening, however large, in one of them." It seems to me that our case illustrated very well in the first operation this same point.

If the septum in Mrs. B. was completely destroyed as a result of disease, it is unique in so far as my researches have failed to find a record of a similar case.

II. If there never was a septum in our patient it is also worthy of record. The case that comes nearest to it is the one of Lothrop's above referred to.

III. It does not seem to me likely that our case was one of sinus developing from but one side of the nasal chamber, viz., the right. The presence of a well defined depression in the region where the left naso-frontal duct is usually situated and not having been conscious of passing through a bony wall at the bottom of this depression in entering the left nasal fossa make me feel that the hypertrophied membrane alone occluded this duct and prevented the escape of pus and irrigation fluid into the left naris.

*Tilly. Journal of Laryngology, Rhinology and Otology, Vol. 16, 1901.

XX.

ETIOLOGY, PATHOLOGY AND SYMPTOMATOLOGY OF CHRONIC SUPPURATIVE OTITIS.

By Charles W. Richardson, M. D.,

WASHINGTON, D. C.

The most frequent cause for the existence of a chronic middle ear suppuration is the transformation of an acute suppuration into one of chronicity; however, this chronicity may be induced. The various ways by which this chronicity may be induced are as follows:

1. By neglect of or an inappropriate treatment of the acute stage. This form of chronic suppuration usually responds readily to judiciously applied local treatment.

2. Through the existence of certain types of constitutional invasion that exert an unfavorable influence on local lesions. Such constitutional conditions are scrofula, tuberculosis, syphilis, anemia and marasmus.

3. Through the occurrence of acute suppurative otitis during the invasion of certain of the acute, infectious diseases, as scarlet fever, measles, diphtheria and typhoid fever.

4. The virulence of the infection and the character of the bacilli present.

5. The acute invasion of the attic is very prone to terminate in chronicity.

6. Through local changes excited at the time of the invasion, or those taking place during progress of the case, such as; (a) The developement of granulation tissue about the membrane or walls of the tympanic cavity; (b)Through periostitis or caries of ossicles or tympanic wall; (c) Through retention and inspiration of purulent discharge.

(7) Thorough local changes within nasal and naso-pharyngeal cavity.

All forms of chronic suppurative otitis are not secondary to the acute type, as we have a class which is essentially chronic from the moment of its invasion. In this class belong these chronic suppurative otitides due to tuberculosis, anemia and diabetes.

The pathologic changes in the condition under consideration are not limited to the confines of the tympanic cavity, but usually extend from the tube to the mastoid cells and from the labyrinth to the auditory canal, involving to a greater or less extent the between-lying structures. The epithelial structures are markedly altered. There is frequently epithelial denudation and necrosis. In those areas where the epithelium is denuded, we have the development of an active papillary granulation tissue, containing cysts. The mucous membrane is generally infiltrated, and consequently many times increased over its normal thickness. The infiltrate is made up of small round cells, with increase in the number and size of the blood vessels. As a result of the development of the papillary granulation tissue, we have the formation of distinct buds, which, if further projected, form polypi. These are seen projecting from the ossicles, tympanic walls and the periphery of the perforations in the membrane. In uncomplicated cases, the bone is not usually affected. Caries and necrosis of the ossicles are the most common forms of bone lesion in the disease under consideration. On account of its limited nutritive supply, the incus is the ossicle most frequently affected. The invasion of the incus may be in the form of caries of its long process or body, or that of necrosis of these parts, or complete necrosis of the whole bone. The malleus is almost as frequently involved, which may be in the form of caries of the malleus head or the tip of the long process or necrosis of one or both of these parts. The stapes is but rarely affected. As a result of caries affecting the ossicles at the articular surfaces, through the disintegration of the ligaments or the contraction of surrounding fibrous bands, we occasionally have dislocation of the ossicles, most frequently affecting the malleo-incudal joint. The carious process may extend to the walls of the tympanic cavity, especially affecting the tegmen tympani and the outer wall, and that portion of the external wall which is formed by the

auditory plate of the temporal. The inner wall is only rarely affected, such invasion usually occurring in tubercular cases and in those secondary to scarlet fever and diphtheria.

The membrane always presents the external evidences of the changes which have been wrought within the tympanic cavity. There is almost always destruction of the membrane to a greater or less extent. The remnant of the membrane varies according to the degree of the activity of the process. At times, the membrane is congested and infiltrated both in the cuticular and mucous layers; at other times it is opaque from degenerative changes, and showing here and there chalk deposits. Very frequently the cuticular layer extends over the edges of the perforation, thus rendering the perforation permanent. From the continued irritation of the purulent discharge passing through the auditory canal, we have a a resulting dermatitis of the canal. The dermatitis produced in the canal is occasionally followed by an atresia of the auditory canal.

The mucous membrane of the eustachian tube is like that of the tympanic cavity, infiltrated. There is an increase in the size of the acinous glands. The epithelia are frequent y denuded.

The changes in the mastoid during chronic suppuration are the most important changes which take place in this serious lesion. These changes are:

1. Congestion, swelling and polypoid degeneration of the lining of the antrum and the mastoid cells.
2. Complete obliteration of the antrum and the mastoid cells through granulation-like development of the lining of the antrum and mastoid cells.
3. Osteo-sclerosis of the mastoid.
4. Accumulation of muco-purulent and purulent secretion in antrum and mastoid cells.
5. The formation of cholesteatoma in mastoid.
6. Circumscribed or excessive caries or necrosis of mastoid.

Symptoms.—Frequently the most pronounced and characteristic symptom of chronic suppuration of the middle ear is the presence of a discharge from the ear. The amount and character of this discharge varies not only in the same case at different times, but varies greatly in different cases. The

amount may be so great as to show an almost continuous discharge from the canal, requiring frequent cleansing or changes of cotton, to a fraction of a drop during the twenty-four hours. The discharge may be offensive from want of cleanliness, from caries or necrosis or from cholesteatoma. The discharge may be red, reddish brown, dirty green, or black in color, according as it is mixed with blood, cerumen, epithelial debris or micro-organisms. The discharge may be thick, creamy, mucoid, or watery in character. The discharge may cease entirely for intervals and then recur. Pain is an infrequent symptom in connection with this form of middle ear affection. Pain may be occasioned by an acute exacerbation, by granulations, filling in the perforation, thus preventing free escape of pus, and through the accumulation of purulent discharge in the antrum mastoideum. Caries and necrosis of mastoid and osteosclerosis are accompanied by pain over mastoid and parietal regions.

A frequently recurring head symptom is the feeling of pressure, or actual headache, often a symptom of increased labyrinth pressure or hyperemia of the meninges. Vertigo is occasionally present. Vertigo, with unsteadiness of gait and vomiting, is usually indicative of caries and necrosis, although it may be produced through inter-labyrinth pressure. The most serious case of vertigo, vomiting and total inability to locomote that I ever saw was due to a small growth in the region of the oval window, which was completely relieved by its removal. Subjective noises are occasionally present, but are not so constant as in the adhesive form of catarrh of the middle ear. They are seldom continuous.

Alteration in the sense of taste is also noted as a result of changes in the chorda tympani nerve.

The amount of impairment of the hearing varies greatly, The degree of the impairment of hearing varies also in the individual case at different times and under varying circumstances. The degree of the impairment of the hearing is dependent on the amount of primary injury; on the secondary changes which result through the persistent suppuration; and on sclerotic and degenerative changes. In the individual case the variation in the hearing is dependent upon the weather, the amount of the discharge, the patulous condition of the

Eustachian tube, the greater or less activity of the inflammation in the tympanic cavity, and granulation and adhesive changes about the ossicles and windows. It is frequently noted that individuals hear fairly well as long as there is a moderate discharge, who become quite deaf when the discharge ceases.

The conditions of the membrane and visible portion of the tympanic cavity vary so in this disease that it is almost impossible to give a typical representation of this lesion. The appearances also vary according to the activity or non-activity of the inflammation. The position of the perforation is most frequently the anterior-inferior quadrant, then the posterior and superior quadrant, while frequently the whole membrane is destroyed. The rarer form of perforation is that through Shrapnell's membrane. The form of the perforation also varies greatly. It may be circular, oval, kidney shaped or irregular in outline. The number is subject to only slight variation. One perforation is almost the rule, although we occasionally have two, and very rarely multiple perforations. The size of the perforation varies from that of a pin-hole-like destruction to the loss of every vestige of the membrane.

The appearance of the remaining membrane varies greatly during the active stage. It may have a dull white appearance, due to thickening of the epithelial layer or chalk deposits. The color of the membrane may show also a yellowish red to one of intense congestion. The border of the perforation is usually more highly colored than the remainder of the membrane. The tympanic cavity shown through the perforation gives evidence of varying degrees of congestion and infiltration of the mucous lining. The periphery of the perforation in the membrane may be free or it may be adherent at any one or more points throughout its circumference to the inner tympanic wall; also fibrous bands may be formed between the membrane at the edge of the perforation and the tympanic wall. The long process of the malleus often becomes adherent to the promontorium. As a result of great activity in the mucosa and the formation of villous prolongations from the same, as well as from the result of caries, we occasionally have the development of

granulations or polypi on the tympanic wall; from carious ossicles we have the same result. These growths, when small, manifest themselves as slight elevations from the mucosa, giving off a distinct light reflex; when large they project from the antrum, or attic, into the auditory canal, and can be readily recognized as distinct blood-red tumors which bleed readily when touched. The auditory canal may not only be the seat of a dermatitis from the irritation of the discharge, but there may also develop from its wall granulation masses. Atresia of the auditory canal is also an infrequent condition. In making a diagnosis of chronic suppurative otitis, it is essential that the auditory canal and the tympanic cavity should be freed from all presence of purulent discharge. The cleansing can be made either through the use of the cotton-holder or by the use of mild irrigation. Where the discharge is so limited in quantity as simply to form a hard blackish crust around the perforation and the circumference of the auditory canal, due care should be exercised in the removal of the crusts, as the granulation tissue on which they rest may bleed, and thus prevent a thorough inspection of the disease. The circumference of the perforation, the condition of Shrapnell's membrane, the presence of all or absence of any of the ossicles and the condition of the changes within the tympanic cavity should be noted at this inspection. The region should then be carefully gone over with a probe for the purpose of detecting caries or necrosis.

XXI.

THE TEACHING OF OTOLOGY TO THE UNDERGRADUATE MEDICAL STUDENT.

By Alex. Randall, M. A., M. D.,

PHILADELPHIA, PA.,

CLINICAL PROFESSOR OF EAR DISEASES IN THE UNIVERSITY OF PENNSYLVANIA, ETC.

The place of otology in the medical course is as yet a matter by no means well defined, and the fault lies largely with the teachers themselves. The specialist has been too often inclined to teach otology as a specialty; and the instructors in other departments have quarreled not only with this view, but even with the rational one that no department of medicine should be neglected in the preparation of the medical graduate. Mankind will long maintain the habit of wearing ears, whether decorated in semi-barbarous fashion or not, and equally long will demand that the affections of these organs shall be rationally treated. To this end, diagnosis is absolutely essential, and should not be left to the specialist alone. "Physical diagnosis" should not be limited to the auscultation and percussion of the thorax and abdomen; but as rightfully includes the exploration of such essential parts of the organism as the upper air passages and their accessory apparatus, such as, in many of its relations, is the ear. The stethoscope should no more than the microscope, the ophthalmoscope, the otoscope or the laryngoscope be the sole instrument of the general practitioner. Because the student or the young practitioner cannot be expected to master the utmost refinements of diagnosis with all or any of these instruments is no reason why he should be limited to doing imperfect work with the stethoscope alone since this may leave him the more in need of additional data obtainable by the other methods of physical exploration.

It is an unfortunate fact that the majority of teachers of so-called "physical diagnosis" are not competent to instruct in laryngoscopy and otoscopy; still worse, some of them seem to glory in the fact, and, like the tailless fox, try to maintain the fashion of a like abbreviation of the medical equipment of others. But every thorough practitioner must frequently realize his need of the facts which can be obtained only by these examinations, and, if incompetent to make them himself, must call in a specialist to aid him. It need hardly be urged that the beginner in medicine can ill afford to proclaim his imperfect medical education by frequently calling for help even to *study* his cases; and the result will too often be that he will proceed under guidance of his fancy rather than of the facts. Many treat conditions which may be wholly misunderstood or unrecognized upon the assumption that the eye, the ear or the throat are *special* organs which it is not their duty to consider. It is very important, therefore, that otologists and laryngologists should follow out the lines suggested by Dr. McKenzie in his address as Chairman of the Section on Otology and Laryngology, of the American Medical Association, three years ago, and by clarifying their own views and simplifying their demands shall make it feasible to introduce a proper amount of these studies into the general medical course. No medical school can afford to have its graduate fairly say that he was not taught how to examine the ear or the throat; and it ought to be a matter of course that practical exercise in the examinations should be given to each individual, not by diagram or model, but on the living patient. Nor is the study to be valued solely in relation to the facts learned as to the ear, nose or throat; but the education of hand and eye becomes of great importance in other branches and will be of daily use to those who may limit themselves to another specialty.

Every student of medicine should receive, in the latter part of his course, individual instruction in ear work; and this need not entail much, if any, addition to the crowded schedule of the present course. One hour closely devoted can suffice to instruct him in the management of the brow-mirror, of the speculum, of the throat-mirror, and of the probe for the investigation by sight and touch of the organ

of hearing. He can be taught the examination of the hearing by the voice, and by tuning-forks in the essent al tests of Rinne, Weber, Gardiner Brown and Politzer; he can be shown how properly to syringe an ear for the removal of cerumen or foreign bodies, or for the cleansing away of pus; how to dry and mop it, and how to make applications at the fundus and insufflate powders. He can be taught to spray the nasal chambers, to mop and cleanse the vault of the pharynx and the tube-mouths, to pass the Eustachian catheter and inflate with it or by the Politzer method; and this with coincident instruction as to the diseased conditions demanding such procedures. One hour thus spent will hardly serve to fasten these matters in his mind—still less give him facility in them; but if they are kept before his eyes by a simple system of wall-charts, these procedures, their teachings and their therapeutic results can be readily impressed upon him; while one hour of clinical work can bring before him a dozen various affections of the ear and acquaint him with their symptoms and treatment. In small sections the simpler operation of mastoid opening for acute empyema can be well illustrated on the living patient, if available, or on the cadaver. Then a half-dozen well-illustrated lectures to the entire class can sufficiently present all the common forms of ear disease and that part of the anatomic instruction requisite for their due comprehension and management.

Upon this minimum of eight to ten hours for every student any desired additions can be made to clinch the matters in the memory and to broaden the comprehension by wider observation. But it is surely fair to say that otology is a branch of surgical practice in no respect inferior in importance for the general practitioner to that of fractures; and we may well demand that an equal amount of time, say ten hours at least, shall be accorded to it. To make this minimum of fullest avail will demand the most zealous and skilful work of the instructor, since one or two hours of it must be absolutely individual and one or two more given to small sections. The best apparatus, in the form of ample stereopticon, or chart or model-illustrations, must be employed in order to make instruction to the larger groups really valuable. The electric otoscope can, in a reasonably brief time, demonstrate to

a score of men in succession the clinical aspects of the drum-head, but this is hardly feasible with large classes. The ear-models in general use are better for showing the systematic anatomy than for bringing home to the practitioner those points of real importance, not only in surgical operation, but especially in the daily routine of topical treatment; and the charts generally attainable have grave shortcomings. Each teacher will do well to devise for himself a set which shall meet his demands; and a few pounds of modeling clay worked up with the fingers can furnish a series of models more valuable for demonstrating practical details than any that can be purchased.

XXII.

A FEW REMARKS ON SOME EVERY-DAY EAR CASES.*

By J. E. Sheppard, M. D.,

BROOKLYN, N. Y.

As a basis upon which to construct this paper, I have taken a recent 1000 cases which furnished me with 1581 diagnoses. Of these latter, 658 concerned the middle ear, of which 134 were chronic catarrhal otitis media (O. M. C. C.). The internal ear alone was involved 57 times, and in 177 there was mixed middle and internal ear disease.†

From these three groups of cases it has been my endeavor to learn some facts, and to draw some conclusions, and possibly to evolve some questions that we may with advantage make the basis of discussion.

To show the ages at which the individuals in these groups presented themselves for treatment I append the following:

Otitis Media Catarrhalis Chronica.

0-10	6
11-20	12
21-30	30
31-40	38
41-50	30
51-60	14
61-70	3
over-70	1

*Read by title at the meeting of the American Laryngological, Rhinological and Otological Society held in Lexington, Ky., April 29 and 30 and May 1, and published in the Brooklyn Medical Journal, July, 1903.

†For convenience in this paper I will designate the O. M. C. C. cases as group A; the Ot. M. et Int. cases as group B; and the Ot. Interna cases as group C.

Otitis Media et Interna.

0-10	2
11-20	2
21-30	25
31-40	46
41-50	30
51 60	35
61-70	28
over-70	9

Otitis Interna.

0-10	5
11-20	4
21-30	8
31-40	15
41-50	11
51-60	6
61-70	4
over-70	4

Thus of group A, 98 cases were between 20 and 50, the decade from 30 to 40 showing the largest number, 38; of group B, the decade from 30 to 40 again shows the largest number, 46, others between 20 and 70 being relatively even; of group C. the largest number, 15. is again found between 30 and 40, with otherwise a relatively even distribution between 20 and 60.

Of group A, 20 cases were entered as without complication, or accompanying conditions; where these existed, the most frequent were naso-pharyngitis (mostly more or less hypertrophic) 49 times, tubal catarrh and stenosis 27 times, septal exostoses (spurs, etc.) 25 times, hypertrophy of tonsils, faucial 3rd. and 5th., 14 times, hypertrophic rhinitis 6 times, dental neuralgia 6 times, and impacted cerumen 5 times

The cases in group B were put down as O. M. C. C. et Int, 44 times (indicating slight involvement of the perceptive apparatus); Ot. M. et. Int. 92 times, indicating a more nearly equal involvement of the two portions); O. M. P. Resid. et Int. 14 times, while aural neurasthenia was specifically mentioned as accompanying the O. M. C. C. 20 times, and anemia of labyrinth 3 times, with a few other scattering accompanying conditions.

In group C the diagnoses were aural neurasthenia 17, otitis interna 18, presbykousis 4, anemia of labyrinth 5, concussion of labyrinth 4, meningitic deaf-mutism 2, labyrinthine tinnitus 4, Meniere's diseases 3.

As to Etiology: In O. M. C. C. the trouble was attributed 111 times to conditions in the nose, throat and eustachian tubes, and in 21 cases no evident cause could be traced. In the *mixed* cases it was attributed to nose, throat, and tube conditions 42 times, to neurasthenia 50, to neurasthenia *and* nose, throat, and tube conditions 32, to neurasthenia and other general conditions 4, general diseases 15, anemia of labyrinth 3, old age 5, syphilis 4, fracture of temporal bone, quinine, and tobacco each 2, and unknown 16. In otitis interna, to neurasthenia 17, nose, throat, and tube conditions 4, anemia 7, syphilis 5, trauma 4, old age 4, organic nerve disease 5, other general diseases 2, tobacco 2, hemorrhage (Meniere's disease) 3, sea-bathing 1, and unknown 3.

The *general condition of health* was investigated, with the following results:

In group A:—Good 80; grippe recently, head-colds, sore throat, asthma, etc., 15; stomach trouble, indigestion, uric acid, rheumatism etc., 9; more or less nervous 7; neurasthenic, tire easily, etc., 9; kidney troble, anemia, etc., 4; more or less general debility 7; syphilitic 1; tubercular 1: menopause 1.

In group B.— good 69; more or less neurasthenic 49; more or less nervous 10; organic nerve disease 5; more or less general debility 11; menopause, uterine trouble, etc., 3; frequent head-colds 3; stomach trouble, uric acid, etc., 11; syphilitic 6; Bright's disease 1; anemic 4; frequent headaches 3; prolonged cough 2.

In group C:—Good 17; more or less neurasthenic 18; anemic 5; more or less general debility 6; syphilitic 4; organic nerve disease 2; menopause 1; malarial 1; kidney disease 1; intensely nervous following removal of goitre 1; nervous from excess of tobacco 1.

Of occupation: Group A:—Unknown 8; minors 10; at leisure 9; housewives 35; mercantile life 34; professional life 25; mechanics, out of door work, etc., 13.

Group B:—Unknown 9; minors 2; at leisure 17: housewives

57; mercantile life 35; professional life 33; mechanics, out of door work, etc., 24.

Group C:—Unknown 2; minors 6: at leisure 8 housewives 15 mercantile life 11; professional life 7; mechanics, out of door work, etc., 8.

As to presence or absence of obstructive nasal or naso-pharyngeal conditions, or of some non-obstructive source of inflammation of nasal or naso-pharyngeal mucosa:

In group A:—Obstructive conditions now, 32; clear history of previous obstructive condition 6; hypertrophic, but non-obstructive conditions, 45; intra-nasal pressure (spurs, etc.), 30; in addition to the latter, but already counted among the obstructive conditions 7; no history of such condition 21.

In group B:—Obstructive conditions now, 24; clear history of previous obstructive conditions, 6; spurs causing pressure 25; spurs not making pressure 16: hypertrophic, but not obstructive, rhinitis, rhino-pharyngitis, etc., 37; no history of such conditions 73.

In group C:—Obstructive conditions now, 3; clear history of previous obstructive conditions 2; spurs making pressure 6; spurs not making presssure 6; naso-pharyngitis 5; no history of such conditions 35.

As to the involvement of one or both ears:—

In group A:	Both - - - -	106
	One - - - -	28
In group B:	Both - - - -	154
	One - - - -	23
In group C:	Both - - - -	43
	One - - - -	14

Result of treatment:

In group A:

Not treated more than 3 times -	47
Remained stationary - - - -	27
Improved slightly - - - - -	23
Improved distinctly - - - - -	37

In group B:

Not treated more than 3 times -	83
Remained stationary - - - -	44
Improved slightly - - - - -	29
Improved distinctly - - - - -	21

In group C:

Not treated more than 3 times - 48
Remained stationary - - - - - 2
Improved slightly - - - - - - - 2
Improved distinctly - - - - - - 5

There are certain facts to be gathered from these data which are more or less significant. Perhaps the first striking fact is the number of *mixed* cases as compared with the O. M. C. C. cases, viz., 177 of the former as contrasted with only 134 of the latter; again, there are more than 2/5ths as many cases of involvement of the perceptive apparatus alone, as of O. M. C. C., viz., 57 to 134. Unless I am mistaken the impression generally prevails that O. M. C. C. greatly outnumbers the other conditions, an impression due, I must believe, to an insufficient use of the differentiating tests. By this term I mean, for daily use that the absolute duration and relative intensity of a series of tuning forks should be secured in all cases examined for comparison with the normal standard, and a more or less accurate determination of the high and low tone limits. Hence, since the treatment of these various groups differs in some degree, the conclusion is inevitable that, for the best results in all our cases, an accurate diagnosis is essential, a truism which in my judgment is too often overlooked.

As a question for consideration I would ask, why is there so frequent involvement of the perceptive apparatus? As a tentative answer I would suggest, first, the exhausted nervous system due to the all-too-strenuous business and social life of the present day; and in the second place, possibly, the constant noises big and little, by which we are surrounded in our daily city life.

A second fact to which I would call your attention concerns the age of these patients; in all three groups the decade containing the largest number of cases is the same, viz., that from 30 to 40; along with this must go the further fact that in the *mixed* cases there is relatively a much larger number apearing after 50 years of age than in either of the other groups. Possibly the following conclusion are justifiable: Group A and group C have no connection with one another in any way; further, perhaps in a considerable proportion of group B, the involvement of the perceptive apparatus has bee n

preceded by the O. M. C. C. condition, but that such involvement is an extension inward of the O. M. C. C., as I believe to be largely held, I am exceedingly doubtful.

Question: may it not rather be a simultaneous involvement of the internal ear, due to some other cause?

Along this same line, under the heading of etiology we come upon these facts: in group A, as we would expect, about 5/6ths are directly attributed to conditions of the nose, throat, and Eustachian tubes; in group B these same parts find mention in less than half the total number, while neurasthenia and other general conditions loom up as important factors in about 2/3rds. of the cases; while in group C the nose, and throat conditions dwindle to 4 in 57 cases, and the trouble is referred to general conditions in about 85 per cent. of the total. These facts seem to me to bear out virtually the conclusions stated above. In this connection the question may perhaps be properly asked, what proportion of our middle ear catarrhal cases in adult life can properly be referred to adenoids in childhood? I must say that the impression grows upon me that this is true of a very large proportion of them; and if so then the conclusion is inevitable that the more universally they are removed, the more is being done in the way of preventive medicine.

In regard to the *general condition of health* it seems to be a fact that of group A, 60 per cent were in good health, this being true of only 38 per cent. in group B, and of 30 per cent. in group C. Of the 40 per cent., O. M. C. C. cases out of health the respiratory and the nervous system were affected in about equal numbers, with the gastro-intestinal tract affected in a majority of the remainder. Out of the 62 per cent. *mixed* cases 37 per cent. suffered from some trouble affecting the nervous system, leaving 25 per cent. suffering from gastro-intestinal disturbance, general debility and other general conditions. Out of the 70 per cent. otitis interna cases out of health the general nervous system suffered in about 45 per cent. leaving 25 per cent. affected with general conditions of one kind or another.

These figures would seem to coincide more or less closely with what we would expect in this direction.

I find no especially significant fact under the heading of

occupation excepting only this—There is not a telephone operator in this whole group of cases. From this fact one of two conclusions may be drawn, either some one else has a pull with the "Hello" girls,or else their work does not conduce to ear trouble.

Question: Is there, or is there not, any foundation for the idea, which I believe to be rather largely held, that the work of a telephone operator is productive of more ear trouble than are other occupations? May it even be possible that by the shutting out of other noises and the more or less constant vibratory massage of a certain character, that the tendency is toward the prevention of this class of ear troubles?

In group A, some nasal or naso-pharyngeal condition (obstructive, hypertrophic but non-obstructive, irritating pressure, etc.), existed in 84 per cent. of all the cases; in group B, 55 per cent.; in group C, 40 per cent,

Both ears were involved in 78 per cent. of the first group, 87 per cent. of the second group, and 75 per cent. of the third group.

In these facts there is perhaps nothing different from what we would expect to find.

When investigating the *results of treatment*, I was at first rather startled to find the number of cases that had not come more than three times for treatment, this number having been taken in a rather arbitrary way, in the belief that without more than this much treatment no result could be expected. But when we consider the not altogether brilliant outlook that we, to be honest, must hold out to these patients, it is possibly not surprising that as many as 35 per cent. (as in group A) should go further and fare worse at the hands of those who promise to cure them in a month. Taking out then these 47 cases, we are left with 87 who underwent treatment, and of these only 30 per cent. remained entirely stationary, 70 per cent. showing more or less improvement, 42 per cent. being put down as showing a distinct gain.

Of the *mixed* cases 83 out of 177 received only three treatments or less. Of the remaining 94 who had some treatment, 44, or a little less than 50 per cent., remained station-

ary, the other 50 per cent. receiving more or less benefit, 21 per cent. of them showing distinct gain in hearing.

Of the third group 48 out of 57 did not remain under continuous treatment, to account for which several factors must be considered; in the first place, in a considerable number of the cases there was absolutely no chance of the conditions being bettered and the patients were so informed at the time of the original examination. Again, among those which may be benefitted, as a rule no local treatment is required, and it has been my general custom to refer such cases back to their family physician, to whom a report is made of the findings in the case, and suggestions made as to treatment. Thus I have left only 9 cases in this group who have continued under my treatment; of these 2 have remained stationary, 2 have improved slightly, and in 5 there was a distinct gain in hearing.

The facts are, then, that more or less improvement was obtained in 45, 28 and 12 per cent. respectively of the total number of cases in the three groups, while, in the cases which were really treated, more or less improvement resulted in 69, 53 and 77 per cent, the improvement being considerable in 42, 22 and 55 per cent. respectively.

That there is nothing brilliant about these results I am well aware—at the same time they are to me at least an incentive to persevere and to try for better results in a class of cases which, untreated, is almost sure to grow steadily worse, and which it was the custom not so very m ıy years ago to advise against treatment. But let us at the same time by all means do what we can, as intimated above, to prevent by removal of adenoids, the development of a condition for which we can do relatively so little. The plan of treatment seems to me beyond the scope of this paper. There is no definite plan; perhaps I might sum it up by saying that tireless patience and perseverance are needed, together with a removal of all the causes so far as possible, especially the ocal ones, alternating periods of local treatment and freedom from treatment and constant watchfulness of the general health.

XXIII.

A CASE OF TUBERCULAR LARYNGEAL STENOSIS TREATED BY TRACHEOTOMY.

By J. Price-Brown, M. D.,

TORONTO.

Laryngeal tuberculosis as a sequence to pulmonary tuberculosis is of such common occurrence that I would not have taken the liberty to present the report of a case to the Fellows of this Society, but for its unusual history, and the remarkable condition of the patient at the present time.

On April 2, 1901, Mr. T. D., piano-builder, age 30, was referred to me by Dr. Thos. Kerr, of Toronto. He had been under treatment for two or three years for dry cough, and for several months his throat had been sore, resulting in odynphagia and dysphagia. There was also dyspnea on lying down, and constant partial aphonia. For some time he had been subject to night sweats. Appetite was gone. Pulse on examination was 120, respiration 24. temperature 99 3/5, weight 117 lbs. There was frequent, almost noiseless cough, racking the body, but attended by little solid expectoration. There was chest soreness but no pain. Whether it was due to the lack of solidity in the sputum or not, microscopical examination of a specimen at the time failed to reveal the presence of tubercle bacilli.

There was no family history of tuberculosis. Neither was there personal history of syphilis.

Examination: Nose normal; pharynx catarrhal and hyperemic; larynx infiltrated, particularly left side of epiglottis rendering examination of vocal cords difficult. There was ulceration along the margin of left vocal cord, slight abrasion of left arytenoid and ary-epiglottic fold. The whole larynx bathed in muco-pus.

There were no rales in chest but bronchial breathing, par-

ticularly on left side, with prolonged expiratory murmur; dullness on percussion over left upper lobe anteriorly; vocal exaggeration so far as could be discerned from imperfect condition of voice.

As the larynx presented the most prominent symptoms, the treatment was mainly direct d toward the relief of that organ.

This consisted of the daily use of an alkaline spray, followed by one of menthol in albolene 5 per cent.; and also every third or fourth day, in the application by cotton holder of 50 per cent. solution of lactic acid.

Following the laryngeal treatment each day in the office, the patient took inhalations first of hot air and second of mentholated air.

Internally, compound syrup of hypophosphites was given; also during the summer, cod liver oil, iron and creosote. Of course this part of the treatment varied from week to week according to circumstances.

By May 12th the patient had improved considerably. The voice was still aphonic, but the infiltration had abated somewhat, the larynx was cleaner, and the ulceration on the cords looked healthier Swallowing was easier, night sweats had ceased, the respiration was freer. Appetite had improved, and the temperature never rose above 99 1/5. Weight had increased to 123 lbs.

On May 13th he had a chill, followed by rise of temperature to 103 3/5 deg. In a couple of days this abated, and symptoms were favorable again.

By June 5th the condition had improved so much that I sent him to Dr. Powell, examining officer for the Gravenhurst Sanatorium, with the hope that he would be admitted into that institution for the summer months. The doctor wrote me in reply, that the Sanatorium was open only for cases in the first stages of tuberculosis; and that as a consequence, my patient was ineligible. He found considerable deposit in the right apex, extensive consolidation in the left apex, and down the posterior side of left lung as far as the seventh rib. The condition of the larynx and bad heart also, combined to make the case altogether too hopeless to be admitted.

Failing to get in, the patient on my advice secured a tent

and put it up in his back garden. Here he tented for a month. Then he went to Muskoka, took the tent with him, and occupied it from that time on until November. In the latter month it was very cold, and having no stove with him, he, each night carried a heated brick from a neighboring house to warm his bed before retiring. The following morning he would sometimes find water frozen an inch thick in his tent when he rose to dress. Notwithstanding this, his health improved; and on returning to the city I advised him to put his tent up again in his back yard—place a little stove in it—and live there all winter, which he did.

During that winter he came occasionally to the office for treatment. All I did for him was to repeat the menthol spray to the throat and order a continuance of the tonic treatment.

By May, 1902, or eleven months after he was refused admission into the Sanatorium, although still voiceless, he had so far improved, that on examining him again, Dr. Powell advised that he be admitted. His weight was then 130 lbs. At this time tubercle bacilli were found in the sputum.

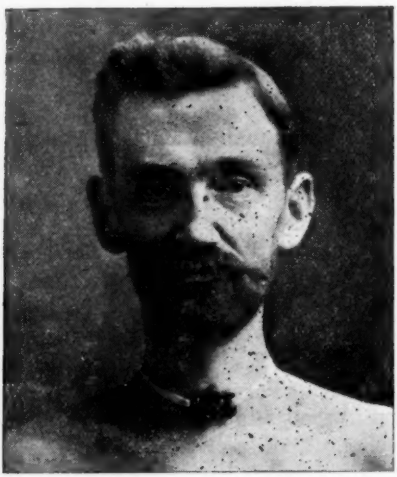
Mr. T. D. remained at the Sanatorium until November last, a period of six months, when he returned to my office with a letter from the house physician. Dr. Elliot stated that the patient had passed an excellent summer, still further increasing in weight, that his lungs had materially improved, that the expectoration had become less, and very few bacilli could be found in the sputum. He had a chest expansion of over three inches. During the last three weeks, however, infiltration in the larynx had increased and stenosis was becoming very severe. He closed by stating that relief from impending suffocation was urgently required.

On examination I found the patient's hands were cold, his skin cyanotic, and his breathing labored and stertorous. These symptoms were said to be much worse at night time.

On using the laryngoscope I found the epiglottis right down to the tip enormously infiltrated, particularly on the left side. It was tilted backward, hiding completely the arytenoids and vocal cords from view.

It seemed to me that the only possible relief that could be given would be by tracheotomy; and that this measure was

justifiable, in view of the fact that the lungs presented so few urgent symptoms. I was well aware that some authorities, particularly the late Lennox-Browne, disproved of opening the trachea even in the worst cases; and it was with some trepidation that I ventured to operate. The hope was, as there was little expectoration from the lungs, that the cough would subside; and that the larynx, being freed from the irritation of breathing, would be benefitted by the complete rest which tracheal respiration would insure.



Hence, on Nov. 10, 1902, I did tracheotomy, Dr. McDonagh kindly assisting, with Dr. Kerr as anesthetist.

There are several points in connection with the operation that I would like to mention Although a high tracheotomy it was an unusually difficult one, owing to the low position of the larynx, and the fact that the lower end of it and the trachea seemed to tip backward deeply in the neck. The first point will be noticed in the accompanying photograph.

The after effect was that the fenestrum in the silver tube used, came directly below the cricoid instead of into the

trachea; and whether from pressure upon the open edge of the tube or the pressure of tubercular diseases in the cartilage, part of it sloughed away, leaving a notch in the lower margin of the anterior side of the ring.

When I discovered the sloughing, I tried different rubber tubes; but the fenestrum, even when farthest removed from the external end, always seemed to do harm. Consequently, I finally discarded the fenestrated tubes altogether; and the one he has worn now for two months or more has no opening in its upper side.

From the time of the operation the laryngeal symptoms slowly improved. Still the temperature occasionally rose to 100 degrees, and several times he had night sweats; though I think these drawbacks arose mainly from the difficulty in procuring a thoroughly satisfactory tube.

Other treatment was practically nil—the objects being to give the larynx perfect rest and to build up the system by an abundance of nutrient food. His room was well ventilated and there was evaporation of moisture from a pan of hot water. This, however, was so slight that I do not believe it affected the case materially. The only throat treatment was an occasional spray of 5 per cent. menthol in albolene.

For some time he continued to run down in flesh, and it was not until he got thoroughly adjusted to the new condition of things that this ceased. He then weighed 125 lbs.

From that time onward, although winter, he went regularly out of doors; fever abated and practically disappeared; expectoration through the tube and throat became less; and he steadily gained in weight.

Present condition: He still wears the tube. If taken out the stenosis is to too great to admit of reasonable respiration. When he closes the tracheal opening with his finger he can speak in an intelligible guttural tone. For many weeks his temperature has at no time been above the normal. He sleeps and eats well; and has no difficulty whatever in swallowing. His weight is 140 lbs, as heavy as he ever was in his life. Recent microscopical examination of the discharges through the external opening and from the throat, being the accumulations of over twenty-four hours, were negative. No tubercle bacilli could be found. The patient manages the

tubes himself without any difficulty, and takes one or both out for cleaning purposes whenever required.

The infiltration of the epiglottis has very much diminished; but the left side which was so enormously infiltrated has shrunk to less than normal size. The whole organ is shortened in length. At the same time it has contracted horizontally backward and downward, so that it still completely hides the vocal cords from view. There are no visible ulcerations; neither is there any appearance whatever of cicatrix. The muco-purulent secretions around the larynx have almost disappeared.

The patient has again taken his tent up north to Muskoka and proposes spending the summer there. When he returns my present intention is to attempt the removal of the laryngeal stenosis by the use of graduated intubation tubes.

Perhaps one or two other results of observation, in treating this case, are worthy of notice.

First, the facility with which oleaginous sprays enter the larynx. When treating the patient at my office, I have frequently taken out the entire tube, cleaned and dried the opening into the trachea and then with compressed air and the down tip, sprayed the larynx with metholated albolene, instructing him to inhale at the time. While in the act of spraying, the oil would trickle out of the opening and down the neck. This would invariably be the case if the spray was at all profuse.

Second, although we all admit that the moisture of the nose is requisite to prepare the air for respiration; yet this man, suffering from combined pulmonary and laryngeal tuberculosis, has for nearly six months breathed practically dry air into his trachea, not only with impunity, but with actual benefit to his tubercular condition. Not only that, but although I have had the tube out dozens of times and examined the parts carefully, I have never found the trachea or even the passage to it in a dry or irritable condition.

Third, while in a case like the one I have had the honor of reporting, tracheotomy is the best and perhaps the only means of affording relief, in the majority of cases of laryngeal tuberculosis, it would be too hazardous to be worthy of trial. When cough does occur, it is very ineffectual, and distressing to the patient; and I can readily believe, from watching the course of this case, that in severe pulmonary disease attended by copious discharges, the distress produced by coughing and expectoration would be only aggravated by the presence of a tracheal tube, and in such instances tracheotomy would be worse than useless.

XXIV.

MASTOID DISEASE AND MENINGITIS.

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The increased attention and critical study of the cerebral complications of aural affections and the brilliant results obtained by the prompt recognition of the nature of the brain lesion or lesions, with the adoption of efficient and radical surgical measures, have led to the obvious conclusion that in many cases of meningitis, the primary origin of the affection could be directly traced to some portion of the auditory apparatus. Friederich has clearly emphasized this view in his statement that the importance of aural disease in the production of secondary diseases of the meninges cannot be overestimated, and the portion of otitic cerebral disease now forms one of the most important chapters of otology.

In practically all the cerebral complications of mastoid disease, with the possible exception of isolated, deep brain abscesses, the presence of inflammation of the meninges to a greater or lesser extent, accompanies the more prominent lesion of the former are masked by those of the latter, or the brain membranes are involved to such a slight extent that recognition is impossible. When the external pachymeningitis, as will be seen later, remains localized and is the result of infection with pus producing organisms, the condition assumes that of an epi- or extradural abscess and as in the particular instance, the condition is primarily one of meningeal irritation, followed by the local pus collection, so may the pathologic process possess an obverse aspect and the

meningitis may be but the result, especially when extensive beyond its boundaries and producing a condition that is rapidly fatal in a short time.

During the course of a mastoid empyema and most frequently in young children, a condition of meningismus or pseudomeningeal symptoms may develop and the difficulties surrounding the selection of proper treatment will be almost insuperable, until a sufficient time has elapsed in order that the value of the various symptoms may be correctly interpreted. Such a case came under my observation several years ago, where in consultation a child of seven years was seen with a history of a purulent discharge from the right ear for one year following scarlet fever. Five days before coming under my observation, she had been exposed to a draft, and during that night she was awakened by intense throbbing pain limited to the mastoid region of the same side. The aural discharge rapidly diminished in amount and within twenty-four hours had practically ceased and the mastoid showed beginning swelling of the soft tissues. The child at my first examination was worn out with constant pain, the mastoid process was exquisitely tender to the slightest touch and was red and swollen. There was a large perforation in the posterior segment of the membrana tympani and remains of inspissated pus in the canal and middle ear. The symptoms calling attention to apparent meningeal involvement were intense headache limited to the right side and especially referred to the temporal and occipital regions. The temperature was 103 degrees and had been 100 1/2 in the morning, while the entire symptom group indicated an intracranial extension of the infection. Immediate operation was advised, but was absolutely refused, so ice dressings were applied to the mastoid, the canal and middle ear were irrigated at frequent intervals with a normal salt solution, and free drainage was established from the middle ear by removing the retained purulent material and enlarging the opening in the drum. Complete recovery promptly ensued and after a lapse of three years the child has had no further trouble with the ear. While this case recovered, such a result cannot be expected as a rule and while it is here cited to demonstrate the prompt subsidence

of meningeal irritation in this particular instance, yet operation would have been equally successful and would have removed the dangers in the future to which she may be subjected, from the presence of the suppurating middle ear, which still remains.

The meningeal irritation may not necessarily advance as far as a true inflammation, but the symptoms may be caused by congestion and edema of the brain coverings, but this at first, and especially in the absence of operative treatment, is practically indistinguishable from an infective intracranial inflammation, except by a careful study as shown by the course of the disease. The meninges may be invaded either from the middle ear or by the involvement of the mastoid process, and it is with the latter especially that we have here to deal, although it is almost impossible in cases where the destruction of tissue is extensive to determine the exact path of infection with any degree of certainty.

The proportion of reported deaths from the intracranial complications of aural disease and especially as regards the relation of the mastoid and meningitis, is suspiciously small, yet we think were due credit given to the aural origin of many fatal cases of meningitis associated with abscess and sinus phlebitis, the proportion would be materially augmented. Especially is this so in children where the presence of a meningitis accompanying an acute or chronic auditory infection is not at all uncommon. Gruber found in 40073 hospital deaths of all kinds, intracranial disease in 1806, and of these 232 were caused by disease of the ear, while meningitis was present in 115 instances. A fact of considerable interest elicited in this connection was that of the latter number dying of meningitis, the male sex greatly preponderated, 87 being males, while but 28 were of the opposite sex. Korner in 151 observations found diffuse meningitis in 23 as the predominant pathological change, and in many other complications patches of adjacent meningitis were constantly present. This is shown by the condition of the meninges in brain abscess, as a large proportion of these pus collections, which can be safely e timated, at least one-third, are the direct result of otitic disease, the infection having been carried by means of the meningeal tissue. As further showing the pres-

ence of this factor, McBride in 44 cases of fatal ear disease found 12 who died of meningitis and in 3 which were classed as brain abscess on account of the predominating symptoms of that affection, there also existed a condition of diffuse meningitis. The large statistics of Barker, embracing 72000 cases of all kinds of disease, show 45 fatal cases due to ear disease. In a study, which he made of 50 fatal cases, 72 pe cent. were due to the association of meningitis and pyemia. This author asserts that of the ordinary complications of ear disease, more than nine-tenths probably consist of meningitis, septic phlebitis and pyemia.

While the brain envelope may be involved in limited or extensive areas dependent upon the degree of the infection, the variety of the inflammation may be different in some cases and the ordinary pachymening tis may be present either as the internal or external variety. Cerebro-spinal meningitis may also exist at the same time as a mastoid empyema, but no relation usually can be traced between the two, and as the effects of cerebro-spinal meningitis are produced secondarily upon the ear and are not the result of infection from the auditory apparatus, they will not here be considered.

As regards infection, practically but two forms of otitic meningitis may be considered, the first resulting from infection by absorption into the circulation and differing from many cases, inasmuch as the exact path by which the morbid material is carried from the ear to the meninges is unknown; while the other variety depends upon the extension of the inflammation by continuity from the mastoid region to the dura and from there to the other membranes enveloping the brain. The former variety is rapid in its onset, usually diffuse and once established is necessarily fatal, while the latter form consists of a gradual process, usually localized in its incipiency and when diagnosed early is susceptible of cure by a radical operation. Poli relates a remarkable case of the former variety in which the rapid diffusion of the infection to the meninges and the entire cerebro-spinal axis was most aston shing. Purulent leptomeningitis therefore is usually fulminating, sets in suddenly and terminates in but a few hours, or may continue before a fatal issue ensues, for several days; while the localized focus analogous to an epidural

abscess, is more or less chronic, with mild symptoms, which may apparently intermit from time to time before a regular course is established and may last for several weeks or even months.

The internal form of pachymeningitis corresponding to the subdural or intradural abscess, is comparatively rare and is usually the result of a circumscribed area of dural inflammation becoming softened, corroded and perforating, with the deposition of exudation and infective material in the subdural space. Under these conditions should the pia and arachnoid become agglutinated to the dura, pus may accumulate in this situation and exist as a subdural abscess with softening and distintegration of the adjacent brain tissue. Should the membranes however not limit the spread of the infection, a general diffuse leptomeningitis will necessarily ensue.

In addition to the acute inflammatory changes of the meninges, a serous form has also been described, and, like the others, may originate from an otitis and compel surgical intervention. Mueller has paid especial attention to this variety and describes two cases occurring in his practice, in both a diagnosis of cerebral abscess was originally made, but no pus collection was found on operation. He considered the condition in one to be that of a chronic serou external meningitis, and an acute internal serous meningitis in the other. The symptoms in the first patient indicated a compressing, cerebral abscess, and on account of the sensitiveness of the left mastoid process in connection with a preceeding otitis, left little doubt of the otitic origin of the intracranial complication. As evidences of the compr.ssion within the skull, were slow pulse and a congested retina, while motor weakness, headache, hyperesthesia of the right side, vomiting, vertigo, numbness and slight elevation of temperature indicated an abscess of the temporal lobe, although there was no aphasia. The absence of stiffness of the nucha and high fever with a regular pulse, were against the presence of meningitis. The operation, however, showed the absence of pus, but the excessive amount of serous fluid found when the brain was exposed indicated a pathologic increase. The dura presented a degree of firmness quite un-

usual and it was then considered that the affection was evidently a beginning suppurative meningitis in the stage of hyperemia and serous effusion. The chronic character of the process was shown by the long continued headache preceeding surgical intervention, while the disturbance in gait and equilibrium still persisted, showing that permanent lesions had been induced. In the second case the diagnosis remained in doubt for several weeks after the operation, but gradually the threatening symptoms induced by the compression ameliorated, the serous effusion diminished and the case recovered without further incident.

The location of the original focus of infection in the mastoid or its immediate vicinity will determine to a great extent the initial focus of meningeal infection. It may, however, affect the entire surface when a basilar meningitis is apparently the form of predilection, or the infection may remain localized with resultant discrete abscess and as the course of the extradural abscess is very slow, adhesions form between the dura mater pia, mater and brain, and act as a barrier to the development of a purulent leptomeningitis. While the abscess so formed may remain quiescent for a lengthy period, further infection from this focus may ensue and a purulent leptomeningitis will follow, such a case being reported by Barkan. Secondary inflammation of the meninges, however, varies in intensity and extent in different cases, depending upon the quantity and quality of the infective elements and the power of resistance of the individua tissues. In some a profuse plastic lymph may be thrown out and the inflammation thereby will be limited in extent, while in others no such means of protection are afforded and a diffuse purulent meningitis results, so extensive as to sometimes involve the cord for a considerable extent. Two locations, however, are commonly the seat of choice, the temporo sphenoidal lobe and the cerebellum, the particular direction in which the infection takes place depending in a measure upon the anatomical pecularities of the individual case.

The precise mode of the extension of the infection is subject to great variations, but in a general way it takes place either by direct continuity or indirectly by the way of the blood or lymph channels. By direct infection from the mas-

toid caries of its inner wall may lead to sinus phlebitis, which in turn may give rise to a septi meningitis. Though the path of infection may be sometimes obscure, it is usually more or less direct, as the area of meningitis is almost invariably on the same side as that of the mastoid empyema. Septic phlebitis of the venous radicles leading from the mastoid is also probably one of the commonest methods by which the septic material is conveyed to the meninges, this route being aided in a considerable degree by the free inosculation of the small vessels of the ear and dura; in this way the infection may be carried through apparently hea thy bones.

Thc dura of the posterior fossa may especially become involved by direct carious processes of the mastoid, or by necrosis, erosion or atrophy, the last form being seen in cholesteatomata. The extension of mastoid disease to the membranes of this region depends to a great exten: on the arrangement of the system of pneumatic cells, and as the cells are lined with epithelium they permit the suppurating process to go on rapidly, and if it extends as far as the inner table, the infection spreads more rapid y to the men nges than if it were separated from the brain membrane by a compact layer of bone. The relation of the route of the infection to the arrangement and number of the pneumatic cells also varies in the child and the adult, and as a result of the anatomical structure of the mastoid in early infancy; inasmuch as it possesses but few cells, while the posterior wall is strongly developed, it renders disease of this region in the infant less apt to invade the meninges of the posterior fossa than is the condition in adults. Another factor which however is not of as much importance in regard to the mastoid region as in that of the tympanic cavity, is thc presence of occasional clefts or fissures in the bone, the presence of such apertures of necessity bringing the diseased process of the mastoid in direct relation and close approximation to the dura.

When a purulent leptomeningitis developes, the pathogenic substance is carried into the arachnoid in various ways, either by perforating the dura or by means of minute channels which leave no macroscopic evidence. The original area of

infection usually developes in the immediate vicinity of the diseased dura and travels from the base of the brain to the convexity of the same side and also across the base to the convexity of the other side if the process be extensive. The pus is found in the furrows between the convolutions and also in disseminated patches, while the pia mater is hyperemic and edematous. The extreme difficulty of tracing the paths of infection from the ear to the meninges may be sometimes unsurmountable, a valuable case in this connection being reported by Wilson, of leptomeningitis of otitic origin, the mastoid contained a deep seated cavity filled with pus, but no granulations nor softened bone. The symptoms then improved for a day, but rapidly grew worse and the patient died comatose. The autopsy showed a large area of leptomeningitis over the base of the brain and the whole right lobe of the cerebellum, which also contained a small abscess. The dura over the upper surface of the temporal bone was healthy except at the junction of the petrous ridge with the squamous portion, where there was a foramen leading through the ridge from the posterior to the middle fossa and filled with pus .

The nature of the microorganisms present in the mastoid empyema play some part in the virulency of the meningeal inflammation and a reduction of the virulency of the specific microorganism present in a given case, effects the occurrence of a circumscribed meningitis, which, of course, is the preliminary condition of nearly all brain abscesses. If on the other hand the bacteria be of a virulent character and if they reach the inner surface of the dura, the inflammation rapidly spreads and a diffuse leptomeningitis is the result. For these reasons a brain abscess is rarely found with acute mastoid empyema and with the bacteria attenuated; infection of the brain substance from the circumscribed meningitis rarely occurs and the patch of meningeal inflammation may exist independently for a long time. Various organisms may be found in the meningeal exudate but the staphylo- and streptococcus are by far the most important. Kirchner reports a case of purulent meningitis with the staphlococcus as the only organism present, while in Hamilton's case of mastoiditis with the pia and arachnoid at the base congested and in-

filtrated with thick, yellow pus, both cultures of the blood and pus gave pure colonies of the streptococcus pyogenes.

As illustrating the formation of an extradural abscess from a localized infective meningitis, which originated from a mastoid empyema, the following case well shows the consequence of events and the favorable results obtained by early operation.

C. M. male, age 35 years, had always been in good health until two years ago, when, following a severe attack of influenza, severe pain developed in the left ear and continued for several days, when it gradually diminished in intensity and finally disappeared. This occured several times within the two years since the primary attack, but as it disappeared spontoneously nothing was done for it. One week before he came under my observation, the pain had again commenced and instead of ameliorating was gradually increasing in intensity, so that he was forced by its violence to seek relief. No discharge had been noticed at any time and when the ear was examined the canal was perfectly dry, but exceedingly red and inflamed, especially along the posterior wall, while the tympanic membrane was violently inflamed and was pushed forward, as if the tympanum contained fluid. The posterior and superior wall in part, projected into the lumen of the canal and all the parts were exquisitely tender. The auricle was pushed forward and the mastoid was swollen and tender. The temperature was 100 degrees F., while the bowels were constipated. Immediate operation was advised and accepted and after the usual preparation of the patient, the mastoid was opened and was found filled with an offensive pus, while ther was extensive destruction of bone tissue. But little pus was found in the region of the tip of the mastoid, the greater part of it being in the cells in immediate relation to the antrum. The pus and necrosed bone of the mastoid and antrum were thoroughly removed and free communication established through the tympanum and external canal by the above means The tympanic cavity was found full of purulent material. Marked relief to the symptoms was obtained and he progressed through the usual course for two weeks, with the mastoid wound healing nicely, when he again complained of pain in the former situation and also located a

painful area extending still further back than the mastoid tenderness. Within a few hours he became slightly delirious, food was vomited, his mental condition was sluggish and he complained of severe pain in the occipital region. The temperature was 104 degree and the pulse 120. No other symptoms that would in any way aid in clearing up the condition, could be ascertained. The original mastoid wound was then enlarged backward and the brain cavity was opened, the dura immediately projecting outward as a red, granulating, non-pulsating mass. Free incision was made into it, when about three drams of pus was evaculated and an abscess cavity was found walled in by masses of plastic lymph, although the meninges were beginning to become inflamed in all directions as far as could be seen. The pus was thoroughly washed out, the granu ations removed and the usual dressings applied. The pain immediately ceased and no further trouble was experienced as the patient made an uneventful recovery. No route by way of which the infection traveled could be ascertained.

A somewhat similar case to this is recorded by Buck, of a man of 57 years, of strong constitution, who had during a period of ten years, five distinct attacks of acute otitis from all of which he apparently made a good recovery. The present attack had lasted for seven weeks, with headache and dullness of hearing but no discharge. The posterior wall of the canal was swollen, the membrana tympani was injected and the mastoid was tender on pressure. The drum membrane was incised but no pus escaped, and he experienced relief for about a week, when the pain returned and the mastoid became swollen. An incision was made through the mastoid periosteum and some relief was obtained, further operation being refused by the patient. The following day he became conscious, pupils were non-responsive, face flushed, head hot, pulse 120 and full, while the breathing became stertorous and death occurred the same night. The autopsy showed a purulent basilar meningitis and a free communication between the mastoid antrum and the cavity of the sigmoid sinus, the two forming an irregular cavity filled with pus.

When a mastoid empyema is about to infect the meninges,

there is almost invariably marked local pain, usually associated with fever. When such a condition occurs especially in the presence of a diminishing aural discharge, the patient should be considered in serious danger of cerebral complications.

Headache is probably the earliest and most pronounced of the meningeal symptoms and while at first it may be more or less localized to the temporal or occipital regions of the affected side, it later becomes generalized; even though the patch of meningitis remains localized, the headache may in some cases be intense and general throughout the whole course of the disease. Dizziness, auditory and visual hyperesthesia, mental weakness, delirium and convulsions are also seen, but are subject to considerable modification by other existing complications such as abscess with high temperature and slow pulse, or sinus phlebitis of a septic form accompanied with rapid diurnal changes of temperature. Usually the temperature is high and remains constant with but few fluctuations, but it may vary from 101 to 105 degrees. Photophobia, vomiting and local or generalized convulsions may also indicate meningeal involvement, while in children general convulsive symptoms are common owing to the high grade of fever usually present from the onset of the meningeal irritation.

The respiratory changes may come on quite early and while in ordinary meningitis breathing is rapid and irregular, with the pulse small and frequent, in the basilar type Cheyne-Stokes respiration is frequently noticed, especially when the posterior cranial fossa has been complicated. The younger the patient the earlier delirium appears, but it is not necessarily characteristic of this form of meningits, as it may not occur until toward the fatal termination of the case, and is present in any of the forms of the intracranial complications, although if it should appear early, it may be of value in indicating a complicating meningitis, but only in connection with other symptoms. In other instances it will be absent during the entire course of the disease, the patient slowly passing into a condition of coma and death. The ocular phenomena in basilar meningitis also present some points of import in this connection, although the optic discs are usually normal

as it takes a week for the development of neuritis when the disease is limited to the posterior fossa, yet the third, fourth and s xth nerves are sometimes involved. Most important in this connection is the involvement of the third nerve, producing at first contraction of the pupil and later dilatation. An early symptom of paralysis also is the failure of the pupil to respond to light, sometimes remaining widely dilated even when exposed to the most intense illumination. Another symptom of the same class of which cognizance should be taken, is the development of strabismus from the involvement of the nerves previously mentioned.

Constipation as a rule is often obstinate and especially so toward the end of fatal cases, while if diarrhea be present or the bowels be normal, brain abscess and meningitis may with a certain degree of assurance be eliminat d. Occasionally in rare cases, paradoxical symptoms may be present, as slow pulse, aphasia, agraphia, impairment of memory and progressive emaciation. These cases, however, are of a very chronic type and the exact intracranial lesion may only be determined when the cases come to autopsy. In adults, of course, it is possible to differentiate the symptoms of the intracranial complication from that of the mastoiditis, but in children such is not always the case and a meningitis may be fairly well under way before more prominent symptoms become evident.

The pathological changes taking place in the dura vary in their rapidity with the extent of the primary infection and from at first being slightly reddened and dull in appearance, the membrane will pass through the successive degrees of vascularity until it becomes thickened and studded with granulation tissue. In the chronic cases dependent upon a circumscribed area of necrosis or caries of the underlying mastoid process, it becomes black in color like the bone, softened and gangrenous, while the parts are bathed in serum or pus and may later perforate, producing a diffuse leptomeningitis. Where the destruction of the osseous tissue is accompanied with considerable pus formation, the dura is separated from the bone by a collection of purulent debris varying in color from the creamy pus of the acute cases to

the thin, discolored material in the more chronic forms. As pointed out by Zaufal in the very chronic cases, the dura may be enormously thickened and present a fibrous or sarcomatous appearance—in one case coming under his observation the dura being $1^1/_2$ cm. thick.

The late development of basilar meningitis following a previously localized area surrounding a temporo-sphenoidal abscess was well illustrated in the following case:

R. L., female, 18 years of age, had measles in infancy fol owed by a suppurating ear for several years. The d s-charge then ceased for a time, but would make its appearance in small amounts whenever she had an attack of coryza.

Four months before she came under my observation the impairment of hearing became markedly worse, and a scant foul discharge was constantly annoying by keeping the canal moist. A few weeks later pain began to develop in the aural region, but she stated that she could never definitely localize it with any degree of accuracy, but the slightest movement of the head and body would immediately render it much more intense. On examination, she was in an apathetic state and cerebration appeared to be very sluggish. There was sensory and motor aphasia, marked drooping of the eyelid and the left pupil was dilated, evidences of optic neuritis on this side being well marked. There was a large perforation of the membrane surrounding the umbo and a smaller one in the flaccid membrane. The temperature was 98.2 degrees, while the pulse was but 64.

Under ether anesthesia the radical mastoid operation was performed, and great quantities of blackened necrosed bone and foul pus was removed from the region of the antrum and inner wall. The cortex of the mastoid showing a condition of compactness almost approaching eburnation, and was removed to reach the softened areas with the greatest difficulty. As evidences of cerebral abscess were more prominent even than the mastoid symptoms, an independent trephine opening was made in the skull over the temporo-sphenoidal lobe and the dura immediately presented as in the previous case as a red, non-pulsating mass. An opening was then made in the inflamed membrane and after considerable difficulty about one-half ounce of pus was evacuated. Considerable improve-

ment was evident in her condition for twenty-four hours when the temperature ran up to 105 degrees, the pulse erratic and bounding, varying from 70 to 120, while intense pain was complained of over the entire head, but especially on the left side, where all the trouble had been. The symptoms of purulent meningitis rapidly increased and she died in coma two days after the operation. An autopsy was refused.

Thereports of the serious intracranial complications of mastoditis render an early diagnosis of the pathological process present in a given case of supreme importance, and the differentiation of any symptoms indicating a beginning meningitis, must, of necessity, be made early in the disease to allow the patient the greatest benefit from operative treatment. The chief symptoms of meningeal irritation are headache, occasional nausea, vomiting, vertigo, moderate increase of temperature and some acceleration of the pulse rate, while thirst, anorexia and constipation are mostly complained of, but are not characteristic. Percussion of the skull affords but little evidence as it may be either painless or painful above and behind the auricle. The differentiation between meningeal irritation and true meningititis in my experience is almost impossible, although the latter may be recognized when the headache become persistent and is followed by the group of symptoms above mentioned, with, in addition drowsiness, delirium and stupor, while the pulse is at first accelerated, and later becomes retarded.

The confusion of the symptom-complex may also be greatly enhanced by the primary stages of the meningitis being due to congestion and edema of the surrounding parts.

An interesting case is reported by Knapp of aural suppuration with headache, nausea, dizziness and some stupor. Later the mastoid became swollen and tender and an opening an inch deep was made, but no pus was found. Four days later free suppuration occurred both from the opening and the canal and temporary relief was obtained. The grave symptoms however returned, with a rise of temperature to 105 degrees and death occurred. The necropsy showed a purulent leptomeningitis of the left temporal lobe and lateral ventricle, while pus was on the inner side of the

mastoid, in the attic and especially around the foramen lacerum.

The great difficulty in recognizing the condition is also graphically shown by another case of the same authors of an apparently strong, healthy man, with purulent otitis for three years. The discharge had ceased for one week and there had ensued headache, increase of temperature, drowsiness, stupor, movements of hands, incoherent and difficult speech and delirium. One physician made the diagnosis of a partial meningitis, while three others considered the condition as one of otitic cerebral abscess. The mastoid was sclerosed and under the cortex the osseous tissue was blackened in patches and contained a few small cavities filled with thin pus. More deeply, the bone appeared healthy, hard and ivory like and free from caries or necrosis, and gave no clue to the way by which the infection had entered the cranial cavity. The patient died three days later and the autopsy disclosed an extensive tuberculosis of the lungs, pleura and pericardium, and a tubercular meningitis which had no connection with the ear.

The difficulty of diagnosis is also enhanced when the otitic meningitis occurs in a tubercular, nephritic or diabetic individual, and a careful survey of the past and present history of the case may even then fail to establish the identity of the affection. As an operation would be more successful if the diagnosis was successfully made before opening the cranial cavity, an exploratory operation may in selected cases be advisable, but usually it is often useless and sometimes it may be dangerous, as it may hasten the unfavorable termination of pre-existing lesions, or even induce the formation of new ones.

Aside from the localizing symptoms, which are of great value when present, the chief symptoms indicating an intracranial lesion have already been mentioned, and the comparative worth of the different symptoms is of great value in determining the presence or absence of meningitis. Optic neutitis is a symptom of great value, but is less frequent in meningitis than in brain abscess. Headache is very intense in leptomeningitis, although it may be absent in some cases. Slowness of the pulse may be an important symptom of in-

cipient meningitis, but unfortunately it is often not characteristic. Rigidity of the nucha is seen in many conditions and depends upon diverse causes, so that it is not characteristic of meningitis, although in connection with other symptoms I consider the rigidity of this region as of considerable diagnostic import. Vertigo and nausea may exist in any of the intracranial complications of mastoid empyema, while fever when high and persistent is strongly indicative of a purulent leptomeningitis, although Allport reports a case of influenza followed by mastoiditis, sinus thrombosis, meningitis and death in which as a most remarkable feature, was the continued presence of a subnormal temperature. The Patellar and other reflexe afford little aid, although they are generally absent in meningitis.

The most reliable group of symptoms characteristic of meningitis in adults are, in connection with the preceding history, constant high temperature, headache and vomiting. But at the same time any intercurrent acute affection must be excluded, and the diagnosis is of necessity rendered much more difficult in children, since any acute affection and even an attack of gastro-enteritis may for a time produce symptoms very similiar to those of meningitis.

Finally, lumbar puncture may in case of doubt, afford much valuable imformation. Grunert in two cases obtained positive results in suppurating leptomeningitis of otitic origin, while Gradenigo used the method in two cases with brilliant results, and as under aseptic precautions Quincke's method offers no especial dangers to the patient, it may in certain cases be the only way left to ascertain the presence or absence of pus in the cranial cavity.

It is necessary in this connection, however, to constantly bear in mind in these cases that it is rare to have but one complication, as two, or even three, viz., abscess, meningitis and sinus phlebitis, may all be present in a fatal case, he exact condition not being actually known until an autopsy is made, but even when such is the case a careful study will enable one, in a limited range, to distinguish the most prominent affection. Such a case is reported by Knapp, in which necropsy showed mastoid empyema, perforation of the lower mastoid wall and extension of the pus down the neck, with

epidural abscesses in the middle and posterior cranial fossa, septic thrombosis of all the sinuses, of both internal jugular and most of the cerebral veins, with in addition an abscess in the temporo-sphenoidal lobe and cerebellum and diffuse purulent meningitis.

With a better appreciation of the relative value of the symptoms and a constantly improving surgical technique, the prognosis of meningitis following mastoid empyema affords considerable hope, especially as favorable results have followed prompt diagnosis and early surgical relief. Macewen having reported six recoveries in itself proves that a lethal issue does not always ensue. In the majority of instances, however, secondary purulent meningitis is rapidly fatal, especially so in patients under ten years of age, so that as a rule it may safely be said that the younger the patient the more likelihood there is of a fatal termination.

In the early stages of meningitis, and but for a short time only, ice caps to the head and large doses of bromids to lessen irritability of the nerve centers may be tried in addidition to free purgation; but these measures are of little value and the only hope as regards success lies in the early institution of surgical measures. The earlier the operation is performed the greater the chances of success, and as the disease is invariably fatal if not checked b operation, we should not hesitate to interfere, even in apparently hopeless cases.

It is unnecessary here to describe in detail the various steps of the operative procedures, but the principles indicated are to thoroughly perform the radical mastoid operation taking especial care to discover the site of any perforations into the cranial cavity. If such are found they should be enlarged and the brain cavity freely explored, but if, however, no sinus is found or no area of necrosis suggestive of the site of the meningitis, the roof of the tympanum should next be explored by entering the cranial cavity above the meatus. The inner table may also require removal in the area of the mastoid wound and any focus of meningeal inflammation or pus cavity should be thoroughly cleansed, the parts packed and the usual dressings applied.

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XXV.

SOME UNUSUAL MASTOID CASES.

By H. Bert. Ellis, M. D.

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Dr. George H. Powers, of San Francisco, on April 22nd of this year, reported the following case. On Sept. 14th, 1902, Mrs. D. Y. entered hospital, with vague account of a severe disease of left ear from which she had recovered. Patient was nearly unconscious, entirely irrational, lying on her back with head turned a little to right; she shrank from candle held near her eyes and from speculum inserted into left ear, otherwise she was neither sensitive nor intelligent. Pupils were dilated but reacting to light; there was no strabismus and no change of fundi. Tendency to opisthotonos existed with abdominal muscles tense. These conditions continued till full consciousness three weeks later. There was neither swelling nor tenderness over the mastoid, but slight sensitiveness in the left auditory meatus; the walls were sufficiently swollen to render a satisfactory examination of the drumhead impossible. There was no indication of purulent or other discharge, but a fairly free incision of the membrane was followed by small hemorrhage and a few drops of pus. Following the incision, the patient became very talkative, but was incoherent and unable to answer questions intelligently and chattered continuously. This condition of alternate comatose and lively irrational conditions lasted two weeks, much of which time the patient was kept in bed with difficulty, although tied down. Sept 17th, lumbar puncture was made and pneumococci found, and these were also found in the ear secretions. Sept. 28th, opened up the mastoid antrum and cells down to tip. No pus was found, only granular and polypoid detritus. No further communication with the middle ear was made. Patient was worse for

a few days, but in a week she was quite conscious and rational and went on to an uninterrupted recovery, with perfect hearing. Highest temperature 101°, pulse 110, leucocytes 5200-7000. This case is remarkable for the amount of mental derangement as compared with the small local disturbance.

Miss B. M. E., a woman of 48 years, was referred to me Aug. 8th, 1902, on account of a facial paralysis, which had come on suddenly a week previously. It was right-sided, and was accompanied and preceded by considerable excruciating pain in the right ear and mastoid region, this pain running down to the neck. There was very marked tenderness, on deep pressure, over the mastoid antrum, but no sign or history of previous middle ear trouble. I opened and thoroughly curetted the mastoid antrum and cells. There was no inflammatory condition whatever present in them, and no pus or other detritus in the antrum, but on entering the antrum many bubbles of air forced themselves through the blood with an audible puff. The cavity was allowed to fill with blood and wound closed with sutures, and healing was by first intention. Five days after the operation, the patient's temperature went up two degrees, the first time there had been any rise; this, after a few hours of anxiety, I found to be the result of an acute suppurative otitis of the opposite ear, and under local treatment both discharge and temperature disappeared in a few days. The facial paralysis began to improve the second day after the operation, and in sixteen days the patient returned to her home without a facial paralysis. With the symptoms present, was the antrectomy justifiable?

Wing Jo, a Chinese infant of seven months, was fretful for two or three days during a period when teeth were appearing. The fretfulness was attributed to this fact, but on the morning of Dec. 26th the child's father noticed a swelling behind the litt e one's right ear. A colleague saw the case and ordered the patient to the hospital for operation that afternoon, at which time the right ear stood out from the head in a typical manner and a slight discharge was found in external auditory canal. The tenderness was marked, the temperature 102.8° and pulse over 140. On opening the soft tis-

sues a large quantity of pus was evacuated and extensive necrosis of the mastoid portion of the temporal bone was found. This was completely removed and the wound packed with sterile gauze. As a result of the operation, the pulse was considerably accelerated and the temperature was by no means diminished for 48 hours, when it dropped to 99.4°, with a pulse of 120. After this, however, there was no further trouble. In this case considerable pus was found in the antrum, but the peculiar features were the rapid onset without history of previous middle ear involvement, although it evidently existed; and the extensive bone destruction.

Tony Larsen, a girl four years of age, had scarlet fever early in December, 1902. During the progress of the disease, before desquamation was complete, she had a double suppurative otitis media. On Dec. 29th, I was called in consultation to see her, found a temperature of 104°, pulse 140 and higher, both ears discharging freely, drooping of the superior posterior walls of external auditory canals, tenderness marked over the mastoid antrums, but very little swelling or discoloration externally excepting that probably due to scarlet fever. Streptococci were present in the discharge. The following day the temperature was 104.8°, pulse 150 to 160, heart very weak and tenderness over mastoids more marked. I did double antrectomy, and was forced to operate very rapidly on account of the exceedingly weak condition of the heart, and also because the operation was performed in the country in the late afternoon in an incompleted room of an unfinished house. In my haste I opened the middle fossa of the skull to a small extent. Found abundant pus in each antrum, scraped out all diseased bone I could find and packed wound with gauze. Although only 55 minutes were occupied in the complete double operation, and less than an ounce of ether was administered, the heart action was so feeble (it being impossible to find pulse in wrist) that I did not expect to find the child alive the next day. Much to my surprise, however, the temperature dropped to 102°, and the heart's action and general condition were much better, and the history of the case to perfect recovery was almost without interruption. Three weeks after the operation, when the temperature had been normal for three days, it suddenly

ran up again to 102°, due to suppuration of a lymphatic gland of the neck. This quickly subsided on drainage. Double mastoid operations are not common, and it is rather unusual, when vitality is so impaired and albumen abundant in the urine and when the operation is performed under conditions when only an effort at asepsis can be made, and in a room without windows or doors, it is unusual, I repeat, even to expect a recovery.

Mrs. K. L. T., aged 30, was referred to me for operation because of an acute facial paralysis of the right side. The paralysis was marked and had come on suddenly in an apparently healthy patient, less than two weeks previously; but I received the information that for something like two years she had been quite deaf in the right ear, she was able to hear the watch only on contact. She had no rise of temperature or suppuration of the middle ear, but had quite marked tenderness over the mastoid antrum. I could not obtain her consent to a radical operation, but she was more than willing I should do an antrectomy, which I accordingly did Jan. 14th, 1903. I found the whole mastoid process pneumatic, the cells and antrum all being absolutely dry and apparently healthy. I converted them into one cavity, cleaned and closed, removed stitches on the sixth day. In two weeks the paralysis had entirely disappeared, there had been perfect union, and at no time after the operation did the temperature go above 99.2°. I kept the patient under observation at the hospital for a third week, when I discharged her. Up to the present date there has been no return of the paralysis. Was there any relationship between the operation and the cessation of the paralysis? I am not at all convinced of it myself, but had I done a radical operation and obtained the same results I should probably have had very decided opinions in the matter.

On Dec. 5, 1902, I was called to see M. S., boy 11 years of age, recovering from typhoid fever, who had been sick eight weeks. On account of discharge from and pain in the right ear, I was called in consultation. The pain had not been severe, nor the discharge profuse, but neither had improved in two or three days treatment. I found a small perforation in inferior posterior quadrant of drumhead, no marked dis-

turbance of Shrapnell's membrane, slight tenderness and swelling over mastoid antrum and at tip of mastoid. Temperature had run up to 102°, although the high point of the curve in the typhoid history had been down below 100° for several days. In two days the middle ear discharge, under boric acid irrigation had ceased and the temperature had dropped to 99°, pain had ceased and patient was feeling very well. On the 12th, bulging began behind the auricle, the patient was more uneasy, tenderness somewhat increased, but pain was not a symptom. On the 13th, the swelling being pronounced, I operated. As soon as I cut down to the bone, I had a large gush of pus. On the use of the probe, I found a necrotic spot at the superior anterior margin of the external auditory canal, which I carefully curetted away before the operation was completed, but not until after I had opened up the antrum and found it healthy. The boy made an uninterrupted recovery. Here we have a case of acute suppurative otitis media, mild in character, acute mastoid periostitis with necrosis and yet no involvement of the antrum or cells.

On Feb. 8, 1903, I was called in by our fellow Dr. E. W. Fleming to consult on the following case: G. S. C., 32 years old, had tubercular consolidation both apices since 1891, associated with elevated temperature, rapid pulse, loss of weight and irritable cough.

Feb. 13, 1902, left ear began to discharge pus without previous history of pain or other disturbance save impaired hearing. June 26, 1902, patient sustained a sudden attack of incomplete paralysis, involving the left side of the face, shoulder and arm, also the tongue.

The paresis lasted but a few minutes; July 26th, experienced a similar attack, but quickly recovered. In the interval between these two attacks and following the second, he frequently articulated with difficulty. Was decidedly inclined to be petulant and irritable, forgetful, and in reading had difficulty in keeping his mind to the text. Dec. 9, 1902, considerable middle ear pain, bulging of the membrana tympani. Moderate swelling over mastoid, with some tenderness on pressure. Until this time drainage good and freedom from pain Examination of pus discharge for tubercle

bacilli negative. Symptoms all subsided, following free incision of the tympanic membrane, ice and hot irrigating. Feb. 1, 1903, recurrence of pain in middle ear and diminished discharge. Bulging of tympanic membrane and some sagging of upper posterior wall. No swelling over mastoid or marked tenderness on pressure. Temperature from 100° to 103°. Free incision of the drum membrane was followed by vertigo and vomiting, which lasted several days. On consultation as the patient was getting low and the suppurative otitis seemed to be an imporant factor in his sudden decline, with the consent of the family a radical operation was decided upon and the same was performed Feb. 9. 1903. During the operation the assistant (the writer of this paper) in probing for the antrum opened the lateral sinus, but the hemorrhage was readily controlled and the radical operation completed. Only degenerated mucous membrane was found in the antrum. Opening the cranial cavity was contemplated but the extreme lowered vital condition of the patient rendered further interference exceedingly unwise. The patient died within twelve hours.

Post-mortem—Left leptomeningitis embracing temporal, sphenoidal and frontal lobes. Adhesions of dura-mater along sinus longitudinalis. Right meningeal thickening involving frontal, parietal and temporo-sphenoidal lobes, evidently of more recent origin.

Brain Section—Pus in cysterna magna. Ventriculi free from pus, on cross sections no pus in brain substance. Extensive necrosis of pars petrosa ossis temporalis. Diagnosis—Meningitis purulenta.

The only wonder in our minds after the post-mortem was how the patient was able to live as long as he had.

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XXVI.

THROMBUS OF THE SIGMOID SINUS—REPORT OF TWO CASES, PRESENTING SOME SYMPTOMS DIFFERING FROM THOSE USUALLY FOUND IN THIS DISEASE.*

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The otological literature of the past five years has contained reports of so many successful cases of sigmoid sinus thrombosis that it may at first seem almost superfluous to bring this subject to your attention; but in the cases I am about to report some of the symptoms as found presented were a departure from those given us by many observers, and it is to speak of and emphasize these in particular, that I wish to report these cases in detail.

Case I gave the following history: L. C., a girl 16 years of age, was admitted to my service at the hospital May 6, 1902. Ten days before she had complained of pain in the right ear, with dizziness and buzzing on that side of the head. She had never had any previous ear trouble.

On admission, her temperature 100.2 F., pulse was 86, respirations 22. Physical examination disclosed on the right side a swollen and darkened drum membrane, bulging over the whole of the posterior quadrant, with a slight prolapse of the posterior-superior canal wall. There was slight tenderness upon pressure over the mastoid antrum, but none over the tip; there was no nausea or vomiting, and only a slight headache.

An incision was made in the drum membrane, and this was followed by a discharge of a thick pus, which was examined and found to contain streptococci in abundance,

*Read at the Thirty-sixth Annual Meeting of the American Otological Society, held at Washington, D. C., May 13, 1903.

together with a few diplococci and pneumococci. The patient was placed in bed, fluid diet and free purgation for the bowels were ordered; and the ear was syringed every two hours with a 1-4000 solution of bichloride of mercury.

The following morning her temperature was 99 F., and she was feeling very comfortable; the middle ear was draining freely, and there was practically no tenderness over the mastoid. This comfortable condition remained for two days, and was then followed by a severe pain in the ear and in the mastoid of the same side.

Tenderness upon pressure over the mastoid antrum was increased, and there was also a further prolapse of the posterior superior canal wall. The temperature was still 99 F.

Owing to the increased pain, tenderness and prolapse of the canal walls, it was decided to open the mastoid; the typical mastoid operation was done, the antrum and cells were found filled with greenish pus, which, upon examination, was found to contain large numbers of the streptococci. The sinus was not exposed, and the patient was returned to the ward in good condition.

The following morning she was very comfortable, the temperature was 98.8 F., pulse 78, and respiration 20. At 3 P. M. of the same day, the patient asked to have a window some distance from her bed closed, saying she felt a little cold; her temperature was at once taken. Although it had been recorded but two hours previously as 99 F., it was now found to be 105.6 F., pulse 146 and respirations 28. In about an hour she complained of nausea, but there was no vomiting.

She still complained of feeling cold, but no chill was present. A special nurse was detailed to care for the case, with instructions to take the temperature every two hours and watch carefully for any evidence of a chill. For the next twenty-four hours, the temperature, taken every two hours, registered at no time higher than 105.8 F., its lowest point being 105.2 F. The chilly sensation continued, and the girl become dull and sleepy; the eyes were examined and found to be negative.

This condition continued throughout the afternoon and night.

The next morning her unchanged condition and continued chilly sensation made me suspect sinus involvement; and at noon of that day she was again taken to the operating room and the sinus exposed from an inch above the knee to the bulb. The dura covering the sinus was almost black in color, and the sinus wall between the knee and the bulb was collapsed. The anterior wall of the sinus was incised at the knee with a scalpel for half an inch, and a small amount of straw colored serum escaped; a curette was passed upward, and a clot about half an inch in length was removed.

This clot was firmly adherent to the anterior and inferior wall of the sinus, and was of a yellowish brown color.

Upon its removal, a free hemorrhage followed from the torcular end of the sinus, which was controlled with iodoform packing. Continuing the incision in the sinus wall downward to the bulb, a portion of the lumen of the vessel was found empty for nearly an inch. Below this point, pus, with a reddish, grumous material was found; this was removed and the curette used freely at the bulb.

Upon wiping away the débris each time after using the curette, a few drops of grayish pus would make their appearance, coming apparently through the bulb from the internal jugular vein. Owing to this condition being present, and to the fact that there was no return hemorrhage from either the vein or petrosal sinuses, it was decided to expose, ligate and resect the internal jugular vein, so as to prevent the possibility of any further systemic infection taking place through the vein on that side. This was done, as was also a portion of the internal maxillary and facial veins, ligated and resected, as, upon exposure, they were found to be involved. There were also four infected glands removed during the course of the dissection.

The ligature used on the jugular ve n was heavy silk, and on the tributaries chromicized gut. The field of operation was cleansed with a hot saline solution, and a continuous silk suture used to close the wound in the neck.

Immediately following the operation, a quart of hot saline solution was introduced into the bowel, and this was all that was necessary in the way of stimulation.

For the next two days, the temperature did not drop below

104 F., and the lowest pulse rate was 144. There was considerable twitching of the right side of the face and mouth, and she was exceedingly restless, but perfectly conscious, complaining only of pain in the head and wound.

On the third day following the operation the temperature dropped to 102.6 F; pulse, 128, and there was less head pain.

For the next six days, making nine days from the time of operation, there was a gradual improvement in her general condition, with a slight lowering of the temperature each day, until on the tenth day it reached normal, where it remained.

The neck wound healed by primary union, and the girl was discharged from the ward service three weeks after the operation, to return every third day for dressing until the mastoid wound was closed. The resected jugular as well as that portion of the tributaries removed, were sent to the laboratory for examination, and the pathologist reported the finding of a broken down clot with pus present. Large numbers of streptococci were found in the material contained in the veins. The glands removed also contained the same characteristic infection.

Case II. E. L., a girl 6 years of age, was first seen on June 2, 1902. The history given by her mother was that she had been taken ill six days previously with pain in the right ear followed in twenty-four hours by a bloody discharge, this discharge lasting three days.

The child had never had any ear trouble before, and otherwise had always been in good health.

Upon inspecting the ears, a scanty purulent discharge was found in the external auditory meatus of the right side; the canal walls were inflamed, and there was a large ragged perforation in the lower anterior portion of the drum membrane over the tympanic orifice of the Eustachian tube. There was no sagging of the canal wall, and only a slight amount of tenderness on pressure over the mastoid antrum. A culture was taken from the discharge found in the canal, and contained large numbers of streptococci. There were also a few diplococci and staphylococci present.

The temperature was 99.2 F., pulse 94. The child was

placed in bed, and the canal irrigated with a solution of bichloride, 1-6000 every two hours.

The little patient slept some at intervals during the night, but complained toward morning of not having sufficient covering over her. When seen the day after her admission, the temperature was 99.6 F., pulse 100. At intervals during the day she complained of feeling cold.

The bowels were moved freely, and she was kept on a fluid diet, and the temperature taken every three hours. The discharge from the canal increased somewhat, but the mastoid tenderness remained about the same.

The child continued practically in this condition for five days, the temperature never rising above 99.8 F., and she complained each day of feeling cold. On the sixth day there was a tendency to sagging of the posterior superior canal wall, and the discharge had diminished considerably. The tenderness over the mastoid was about the same as on the days previous, but the child was beginning to look septic, and the breath was very offensive. The tongue was dry, heavily coated, and of a dark grayish color.

Believing we had a condition, the cardinal symptoms of which, for some unknown cause, were masked, an operation was decided upon. The usual mastoid operation was done; there was only a small amount of pus found in the antrum and at the tip, but the whole osseous structure was infiltrated and softened, and nearly all the inner table was removed. The sinus was very close to the posterior canal wall and was exposed below the knee; the dura covering it was distinctly greenish in color, and seemed more prominent than one usually found in a patient as young as this one. A further exposure was made both above and below the knee, and at these points the dura was greenish in color also. The anterior sinus wall at the knee was opened with a scalpel for about half an inch, and immediately about a teaspoonful of thick, grumous material began to ooze through the slit made in the wall; it was of a reddish brown color, of about the consistency of thick cream, and incorporated with it were particles of pus.

A dull curette was used above, and more of the same material removed and free hemorrhage established. The lower

portion of the sinus toward the bulb was now curetted, and, after the removal of more of this reddish brown material, the character of the substance began to change and assume more nearly the character of dark colored pus.

The bulb was now curetted without any flow of blood taking place. The sides of the sinus wall were separated and the lumen of the vessel in the region of the bulb was wiped clear of pus and debris, and when this was done the same dark colored pus was seen coming up through the bulb.

Believing we had here to deal with an infected vein as well as a sinus, the neck was prepared and the internal jugular vein was exposed, ligated below at the clavicle and above at the bulb and resected.

The tributaries did not show any evidence of infection, so they were ligated and left in position. Neither was there any glandular involvement. The wound was closed by a continuous suture to within an inch of the bulb, and healed by primary union throughout. The resected vein for 2½ inches below the bulb contained a soft substance easily compressible by the finger.

The lower portion of the vein to its point of ligation beneath the clavicle was collapsed. The resected portion was sent to the pathologist for examination, who reported as follows:

"In the case of L. E. I beg leave to say that the internal jugular vein was thrombosed for a little over 2 inches, the clot was formed from pus and broken down blood and cellular elements. There were a large number of streptococc present; there were also found a few diplococci and pneumococci."

The usual dressing was applied and the patient was returned to bed without having had recourse to stimulation during the operation.

Three hours after her return to bed she had a chill, and the temperature rose to 106.3 F., with pulse 166 and respirations 54. In an hour the temperature had dropped one degree but the pulse was 174 and very weak.

Transfusion with a normal salt solution was now done through the median basilic vein, and oxygen administered every few minutes.

Under this stimulation her pulse improved, and the temperature at the end of twenty-four hours had dropped to 101.4 F.

From this time until the date of her discharge, four weeks later, there was no complication, although her temperature did not reach normal and remain there until nine days after the operation.

That there are a few points of extreme interest in the onset and development of these two cases which will bear dwelling upon for a few moments, I think all will admit.

First—We have here as the cause of the mastoid and sinus involvement an acute inflammation of the middle ear in both. While this is by no means a rarity, still it is an unusual condition following so rapidly upon an acute otitis.

Second—The predominating infection in both cases was due to a streptococcus poisoning; and, it is believed, it is largely due to this, that the rapid involvement of the osseous structure was caused. It was also, on account of this infection, that no other abortive measures were used to cut short the disease, when the cases first came under observation, for, in a large percentage of the cases observed during the past six years, it has been found that where this infection predominates, abortive treatment is of little or no use. In fact, it only masks or retards their development, and much valuable time is lost.

In a report given me by the late house surgeon of the New York Eye and Ear Infirmary, of all cases presenting themselves at this institution since 1897 with this characteristic infection, no matter what the abortive treatment had been, four-fifths went on to operation. So that, given a case of acute purulent middle ear discharge, with incipient mastoiditis, if the infection predominating be that of the streptococcus, no matter what abortive measures are used, the majority of cases reach the operative stage.

Third—In both cases there was no chill, only the sensation of feeling cold; and in a paper on this subject, presented to the American Otological Society four years ago, I called attention to this fact, and at that time stated that we were not justified in waiting for more definite symptoms than this chilly sensation complained of by these patients. That is,

given the other symptoms usually present in these cases, with the patient complaining of feeling cold, we should not wait for a decided chill before operating, for in many of the cases I have observed, a chill has not been present during the entire development of this disease.

Fourth—In the first case here reported, we have a continuously high temperature, never falling below 105.2 F., which, if we follow the typical temperature chart of an ordinary sinus case, is unusual; for we expect a rapid rise, and either a sudden or gradual remission, and oftentimes look for this to be repeated before we decide upon a further investigation as to its cause. In the second case, the temperature differs markedly from that of the first, and, in fact, from the majority of sinus cases, for at no time during the six days that the case was under observation did the temperature register higher than 99.8 F., and in this case, had one been guided to any extent by the temperature, he would hardly have deemed it necessary to operate upon the case at that time.

62 West 52 St.

XXVII.

REPORT OF A CASE OF BILATERAL ABSCESS OF THE SEPTUM, WITH WELL MARKED SYMPTOMS OF SEPTICEMIA;

AND

REPORT OF A CASE OF EPIGLOTTIC ABSCESS, WITH SECONDARY INVOLVEMENT OF THE CERVICAL GLANDS.*

By William Ledlie Culbert, M, D.

NEW YORK.

The writer has thought it might be of interest to report the following cases, not only on account of their comparative rarity, but also because of certain peculiar clinical features which they presented.

In a somewhat hurried review of the literature of these two subjects I find quite a few cases of abscess of the septum reported, but only eight cases of abscess of the epiglottis during the past dozen years.

ABSCESS OF THE NASAL SEPTUM.

Case 1.—Mr. A., 31 years old, broker, a steady cigarette smoker and moderate drinker; no specific history; catches cold readily. Came to the office on August 30th last, with the history that five days previously he had contracted a severe cold. The following day he felt so sick he had gone to bed, and since then had been suffering with chills, fever, sweats, severe pains in his back, limbs and joints, becoming steadily worse. On the fifth day he came to the office; he had a temperature of 104 F. and a pulse of 132; his skin was

*Read before the American Laryngological, Rhinological and Otological Society, at their annual meeting in Lexington, Ky., on April 30, 1903.

clammy; he was very weak, looked very sick, and altogether he presented a picture of marked septicemia. There were, in addition, all the local symptoms of abscess of the septum. The pain was intense and throbbing. Both nostrils were completely occluded, the nose was large and the alae bulging on both sides. The mucous membrane was loose, the tumor boggy to the feel, and fluctuation was easily made out. As he came from quite a distance, and was so very weak, I sent him to a hospital near by. The infected area was cocainized, and although there was no doubt of the existence of free communication between the abscesses on either side, yet, to make sure of thorough evacuation and free drainage, both sides were incised by a nearly horizontal cut about 1½ inches long, and a vertical cut ½ inch, as far back as possible. The abscess cavity was then irrigated with peroxide of hydrogen, and subsequently with a warm carbolic solution, 1-80. A strip of iodoform gauze was inserted in either side and pushed upward and backward for a considerable distance, where the abscess had dissected up and separated the mucous membrane from the bone. Relief from the pain in the head and other local symptoms was immediate. By the next day the temperature had fallen to normal and all septic symptoms had disappeared. One strip of gauze was removed, and the following day the other strip was taken out. Prompt healing took place, and there was no return of any of the symptoms. The patient left the hospital on the third day and was instructed to observe the discharge from the nose. Five days after the operation he returned to the office. The septum appeared normal. He brought with him a small quadrangular piece of bone with necrosed edges and resembling one of the plates of an ethmoid cell. I have recently tried to communicate with this patient, but learn that (unfortunately, for my satisfaction) he is abroad.

The feature of this case to which I desire to call particular attention, is the occurrence of marked symptoms of septicemia. This is not usual, I believe. The etiology is not clear in this case, no explanation being found beyond an antecedent coryza. Septal abscess is most often the result of trauma, with or without the formation of hematoma.

Ballenger* reports a case following the removal of a septal spur. Freeman† reported six cases of hematoma, three of which became purulent. In all of these cases there was a free communication between the collections on both sides of the septum. In a paper read before the Laryngological Section of the New York Academy of Medicine in February, 1899, Waterman reports three cases, one of which was bilateral with no communication between the two sides. A number of cases are reported by Labinski,‡ Wagner,‖ Delevan,§ and others. From these it appears that the exciting cause is often obscure—traumatism, infectious fevers, and metastases from other neighboring pus foci having been brought forward as the most likely cause. In the case just reported, the question arises as to whether, in view of the discharge of a plate of bone resembling the ethmoid in structure, the infection did not start in this region. It is also stated that in most cases the abscess is unilateral and confined to the cartilaginous septum. In this case it was bilateral, and both cartilaginous and bony septum were involved.

ABSCESS OF THE EPIGLOTTIS.

CASE 2.—The patient, Mr. H., aged 34 years, merchant, came to me on August 11, 1902, complaining of pain on deglutition, difficulty in breathing, thick and difficult speech, and a sense of swelling in the throat. He is a smoker, drinks moderately; no specific history. He is a gouty subject, and has suffered from repeated attacks of quinsy. His statement, when he presented himself, to use his own words, was, "I think I have another attack of quinsy, but it seems to be displaced downward." These symptoms had lasted for two days before seeking medical aid. The only etiological factor besides gout was a slight coryza. Examination showed the anterior chain of cervical glands on both sides of the neck swollen and tender, more so on the left, corresponding to the position of the abscess. He had a temperature of 100.5

*Memphis Lancet, March, 1899.
†Laryngoscope, October, 1901.
‡Deutsche Med. Wochenschrift, Sept. 9, 1901.
‖Archives of Laryngology, Vol. I, No. 1.
§Archives of Laryngology, Vol. IV.

F. and a pulse of 90. The laryngoscope revealed a mass at the base of the epiglottis filling up most of the glosso-epiglotic fossa, pointing upward and originating appareutly at the base of the anterior surface of the epiglottis a little to the left of the medial line. The epiglottis was displaced backward and pushed somewhat toward the opposite side. The mass was about the size of a small walnut. The epiglottis was injected and slightly swollen, the edge, however, being fairly sharp. There was considerable inflammation of the surrounding tissues, but no edema and no involvement of the larynx. Operation was performed without delay and without an anesthetic. An attempt was first made to incise the abscess with a straight knife, but it was found impossible to puncture it low enough down to secure a thorough evacuation and drainage by this means. A sharp, curved aneurysm needle was then tried. With the guidance of the laryngeal mirror, the needle was thrust into the base of the swelling on the left side and then withdrawn with an upward motion thus tearing the tissues a little. Through the opening thus made, the pus found free exit. Relief was instantaneous. Subsequent treatment consisted of a hot gargle at frequent intervals and in the application of ice to the glands. The patient left the hospital two days afterward, and by the 18th all swelling in the glands had disappeared. A recent examination which was made showed an absolutely normal condition, without any evidences of his former trouble.

The interesting feature of this case I take to be the extensive involvement of the cervical lymphatic glands. This, so far as I have been able to learn, is not usually attendant upon epiglottic abscess. As to the precise point of origin of epiglottic abscess, writers differ. Zublinski* and Caz† report cases of phlegmonous inflammation of the glosso-epiglottic fossa, and appear to think that abscess of this region originates in the loose connective tissue on the floor of the fossa. Howe‡ reports a case in which the abscess developed on the interior surface of the epiglottis. Abscess of the lingual

* Deutche Med. Wochenschrift, Feb. 23, 1899.

† Archiv. für Laryngology, Band VIII, Heft 2, 1898.

‡ N. Y. Med. Jour., 1889, p. 628.

tonsil, according to Swain, Saminsky and others, is not so uncommon, and the epiglottis, from its relation to the lingual tonsil, is prone to partake of inflammatory processes of this tissue. Chamberlain * reported a unique case of cold abscess, in which the whole membranous covering of the epiglottis was undermined. In the writer's case, the origin is believed to have been at the base of the epiglottis. As to etiological factors in general, typhoid fever, hot fluids, foreign bodies, and extension from neighboring parts are mentioned. In one reported case only, that of Fredet,† there was an extensive edema of the glottis with a fatal result. As a rule, however, comparatively slight laryngeal involvement is noted.

54 East Thirty-fourth Street.

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*Medical Record, 1891, p. 427.

†Union Medicale. 1885, p. 1068.

XXVIII.

A CONTRIBUTION TO OUR KNOWLEDGE OF THE CAUSES OF LEFT RECURRENT LARYNGEAL PARALYSIS.

DR. O. JOACHIM,

NEW ORLEANS, LA.

Every now and then it becomes necessary for us to clear our conceptions of the estimate and value we should place upon certain accepted symptoms and conclusions: to enlarge, restrict or modify the same in the light of our own observations, or of investigations and interpretations placed upon them by other observers. A single case, presenting such a well recognized picture as is seen in paralysis of the left recurrent laryngeal nerve can at times tax our powers of diagnosis to the utmost, cause us to be satisfied, if we have interpreted our observations aright; and move us to serious reflections, if the post mortem reveals conditions, which we have not been able to discover or have not interpreted aright.

The knowledge of our limitations in diagnosis can only act as an additional incentive to our efforts to profit by the past, and to double our endeavors in the future. The existence of such limitations, implying as it does the easy possibility of differing opinions, was demonstrated in a case recently under observation, which was examined by several highly competent medical men. The case is of interest for this reason and of importance because the post-mortem showed a very unusual cause for the paralysis of the recurrent laryngeal nerve. The history of the case as furnished by Dr. S. K. Simon is epitomized:

Wm. M.——, age 4, a German by birth, fisherman by occupation, was admitted on February 9th, 1903. Difficulty in swallowing began five weeks previous to admission; hoarseness, one week previous. An indefinite soreness was

felt and complained of across the chest about the level of the second rib. His family history was entirely satisfactory as far as within the patient's knowledge. He had measels as a boy; syphilis was denied, and no indications were observable. He had had gonorrhea, and living in a swampy region, a single and severe attack of malaria. Beyond this he enjoyed good health and a fine physique. A year previous to his admission he had difficulty in swallowing, which was relieved by a single introduction of an esophogeal bougie. He admitted of having had slight attacks of this difficulty since that time; not sufficient, however, to cause more than an annoyance. His weight on admission was 15 to 20 pounds less than usual, and the difficulty of getting ood down, especially liquids had become great, causing excessive spells of coughing. The expectorated and regurgitated material was at the time of admission frequently streaked with blood. Laryngoscopic examination showed cadaveric position of the left vocal cord. There was no indication of enlargement, induration, or pain on light or deep pressure, or an active or passive motion of the parts. No enlarged glands anywhere about the neck. Sensibility of the larynx and pharynx not impaired. The area of heart dullness was within usual limits; the heart sounds normal and weak. Spleen and liver normal; abdomen retracted and somewhat tender. Physical examination of the lungs, when admitted, was reported normal; digestive functions with exception of deglutition not complained of. Sputum free of bacilli of tuberculosis on repeated examinations. Pulse rate normal, slow and full; of appreciably smaller volume in left than in right radial artery. The same difference existed in the subclavian artery. Temperature normal; never exceeded 99 degrees subsequently, and frequently was slightly sub-normal. When examined by the writer, the lower right lung was full of large mucous rales, but relatively free subsequently. In a lesser degree, these rales appeared and disappeared at different times in other portions of both lungs. The heart action was weak, and in the left half of the inter scapular space the writer thought he heard a murmur on cessation of breathing, which he interpreted as a bruit. An x-ray examination made by one of the consultants, showed an abnormal trian-

gular dark area in the upper part of the mediastinum. An esophageal bougie encountered an obstruction about the level of thc third interspace. Emaciation, dysphagia, hemoptysis, pulse rate gradually increased with a rapid downward progress of the patient. The administration of potassium iodide when first obscrved seemed to be of benefit, but with the increasing difficulty of swallowing had to be discontinued. Nutritive enemata and heart stimulants supported the patient until shock due to operation of gastrostomy, caused exitus on April 7th.

An autopsy of the organs concerned was held, the consultants being present:

Both lungs extremely bound down by old adhesions; abscess in middle lobe of right lung. Abscess at apex of left lung. Trachea ulcerated and perforated at bifurcation. Ulceration of anterior wall of esophagus, communicating with trachea about one inch in length at lower portion of ulceration. In the esophagus, about one inch below the perforation was found an annular structure. Bronchial and other glands not eblarged Heart, normal. Larynx without ulceration. Abscess pus not tubercular. Anatomical diagnosis; ulceration of esophagus and trachea; stricture of esophagus; metastatic abscesses.

Epicrisis: In the light of the autopsy, we naturally assume the sequence of events to have been esophageal stricture, followed by ulceration of the esophagus above the stricture and arosion of trachea; gradually enlargement of communication; lung abscesses due to entrance of solid infectious matter and metastasis. The autopsy explains the recurrent paralysis by involvement of the nerve in the inflammatory process surrounding the ulceration. The diminished radial and subclavian pulse were due to the imbedding and constriction of the subclavian artery in the adhesive process surrounding the abscess in the very apex of the left lung. The question naturally presented itself, why these conditions escaped the observation of all the consultants and how far the existence of the recurrent paralysis could have helped us in arriving at a correct diagnosis?

It is needless to say that in full appreciation of the importance of the symptoms of recurrent paralysis we searched for all the

recognized and recognizable causes which led to the suspension of its function. The central as well as the systemic causes like catarrhal, toxic, rheumatic or infectious influences we could exclude; equally well some of the anatomic lesions affecting the nerve in its course, as pericarditis, pleurisy and chronic pneumonia, tuberculosis, esophageal cancer, pressure from benign or malignant thyroid enlargement, glandular tumefaction, or neoplasms of the neck. Our consideration embraced mediastinal neoplasms and aortic aneurism. All of the observers located the trouble in the mediastium, but differed as to the nature, holding to enlarged bronchial glands, malignant neoplasm and aortic aneurism of the sacculated variety, or occupying the concave portion of the arch. The occasional absence of a bruit in the aortic aneurism was remembered. The existence of a mediastinal enlargement seemed to explain the pronounced symptom of dysphagia by pressure on the esophagus and the paralysis of the recurrent laryngeal seemed to account for the entrance of food and liquids into the lungs and resulting in excessive coughing spells and regurgitation. Knowing the result of the autopsy these deductions were not sound. The sensibility of the larynx and pharynx being unimpaired, regular and copious entrance of food into the larynx was not a necessary result of the recurrent larygeal nerve paralysis; while retention of food in a dilated esophagus above the compression would not necessarily lead to violent and regular coughing spells. Every assumed condition was prohibitive of introduction of an esophageal bougie, and no positive information could have been gained by it. The difference in the pulse volume found an effective and unexpected solution in the autopsy finding. At the very apex of the left lung a large abscess with a strongly adherent capsule existed embedding the subclavian artery. The history states that this difference was less marked toward the end of life, which I venture to explain by the ability of the narrowed lumen of the vessel to better accommodate the lessened amount of blood as emaciation progressed. While remembering the possible anatomic sources of error, the writer's opinion was unquestionably influenced by this symptom, which extended to the subclavian artery, especially so, as Semon in his masterly contribu-

tion to Heymann's hand book says, that the smallest abnormality found requires our strictest attention. General experience leads us to look for an aneurism when no subjective or objective symptom can be found in the course of the recurrent laryngeal in the neck to account for the suspension of its function. The same author mentions aortic aneurism and esophageal carcinoma as by far the most frequent causes of recurrent paralysis. M. Schmidt devotes four pages to aneurism as an etiologic factor in the production of recurrent paralysis and three-quarters of a page to all other causes. Bosworth, however, upon the basis of his personal observation utters a caution as to the frequency of aortic aneurism as a cause of recurrent paralysis. He says: "While this latter affection not unfrequently gives rise to it, it is probably a mistake to regard it as the most frequent cause." This is well worth bearing in mind. The cause which has given rise to the recurrent paralysis in our case has found no mention anywhere as far as present investigation has shown, and while probably of rare occurrence, adds this cause to our knowledge of the subject. The primary cause of the stricture of the esophagus could not be traced. The specimen, which has been preserved, is to be further studied from this and other points of view. The abscess in the right lung was probably due to direct entrance of food, being in relatively close proximity to the ulceration. The adhesions of the lungs were so complete and dense that the parts were torn before a direct connection could be traced. The abscess in the extreme apex of the left lung was probably metastatic, being above the level of the ulceration and of smaller size than the right abscess. Both abscesses escaped detection on physical examination. The large mucous rales in the right lower lobe were extremely copious and masked all other auscultatory sounds. The recumbent position probally accounted for the lack of dullness on percussion in this and in the abscess of the left apex by permitting a relatively unoccupied space between itself and the chest wall.

XXIX.

A DEMONSTRATION OF SOME EXPERIMENTS ON THE NATURE AND SPECIFIC TREATMENT OF HAY FEVER.*

By Sir Felix Semon, C.V.O., M.D., F.R.C.P.,

PHYSICIAN EXTRAORDINARY TO HIS MAJESTY THE KING.

In November, 1902, Professor W. P. Dunbar, the Director of the State Institute for Hygiene of Hamburg, published a pamphlet on the Cause and Specific Treatment of Hay fever,† in which he reported the results of his investigations concerning that troublesome affection. He had succeeded in isolating from the pollen of certain grasses a toxic substance which, when applied in very small quantities to the eyes or nostrils of people predisposed to hay fever, had in a few minutes produced in a more or less marked degree the local symptoms characteristic of hay fever, whilst the same quantity of the toxin when applied to the eyes or nostrils of persons not predisposed had remained without any effect.

Further he had succeeded, by injecting the pollen of rye, maize and several other grasses into the circulation of various animals (rabbits, goats and horses) in producing an anti-toxin which when applied to the eyes or nostrils of hay-fever patients in whom the local symptoms of hay fever had been artificially produced by the previous injection of the toxin, immediately quelled the subjective symptoms, and after a few minutes caused retrogressive changes in the objective symptoms, produced by the toxin.

These are the principal results—speaking from the practical point of view only—so far obtained by Professor Dunbar though his communication, which has been recently followed

*From the British Medical Journal, March 28, 1903.

†Munchen and Berlin: Oldenbourg, 1903.

by a second* teems with other interesting points. Thus I mention that whilst the pollen of twenty-one different kind of grasses have so far been found to contain the toxic substance producing hay fever, the pollen of roses, limes, wormwood and other plants, which have been, and are still, frequently accused of causing hay fever in those specially predisposed, have been found by Professor Dunbar to be inactive. It is not the ethereal oils contained in the pollen which produce the typical symptoms. Prof. Dunbar has obtained from pollen three different products: (1) The true toxic substance, (2) a starchy matter, and (3) the ethereal oils, and only the first named (which he has isolated in the form of a white powder) produces the typical symptoms, whilst the ethereal oils although they have a certain irritating smell, are deficient in toxic properties. His most recent researches lead him to believe that the toxic substance is a proteid, as it gives the characteristic proteid reactions. Finally, it appears from his investigations that it is not the spicula, as it had also been surmised, of certain pollen which mechanically produce the irriation, inasmuch as the pollen of the grasses in question have absolutely smooth surfaces. For further details concerning these and similar points, I must refer to Professor Dunbar's original communication, which it may fairly be hoped will soon be published in an English translation.

At the present stage of the investigations it appeared desirable to Professor Dunbar that his researches should be controlled by other independent observers, and with this object in view he was good enough not only to send me small quantities of both the toxin and the antitoxin, but to depute his assistant, Dr. Carl Prausnitz to help me in the experiments which I now report. I take this opportunity of expressing both to him and Dr. Prausnitz my sincere thanks for their kindness.

The toxin was, I understand, produced by extracting crushed maize pollen with saline solutions at body temperature for about six hours, and by precipitating the toxin with

*Weitere Beiträge zur Ursche und specifischen Heilung des Heufiebers, *Deut. Med. Woch*, 1903, No. IX.

alcohol. The antitoxin was obtained by injecting horses with this extract. Many horses were, however, found refractory, the best results were obtained from young thoroughbreds.

The experiments in question were performed on March 19th in the presence of and with the kind co-operation of Dr. Prausnitz, Mr. Lanyon Owen, Mr. Armour, Dr. E. Law, Mr. Louis Taylor, Dr. Tilley, Mr. Waggett and my eldest son.

On the six last named gentlemen and myself control experiments were undertaken, whilst the two first-named, who are victims of hay fever, very kindly allowed a complete series of experiments to be performed on them. In addition to them, three patients of my own—Miss C., Miss K., and Mr. R. S.—were sufficiently animated by love of science, if not by the hope of being ultimately relieved of their troublesome affection, to submit to the by no means very agreeable experiments, and to all of them I hereby tender my sincerest thanks.

The experiments began by the instillation by means of a pipette of one drop of a solution of the toxin (1 in 1000 of normal saline solution), to which was added one-fourth per cent. of carbolic acid into the left eye of the seven gentlemen on whom the control experiments were to be performed. The general effect in all of them was, with two exceptions, which will be presently referred to more fully, absolutely negative. A momentary sensation of irritation which occurred in a few instances immediately after the injection, was no doubt due to the addition of the carbolic acid, and invariably passed away in a few seconds.

It was different in the case of Dr. T.; he after a few minutes complained of a feeling of itching and burning in the injected eye, the caruncle began to swell, the lower lid became considerably congested and the conjunctival vessels were markedly suffused. These sensations persisted for about half an hour, and then gradually disappeared.

It was at first thought that it was perhaps not quite fair to judge from this case, inasmuch as the gentleman in question not merely suffers, although only very occasionally, from asthma when residing in certain localities, but also that, as he stated; the mucous membranes of his eyes and nose are extremely sensitive to wind and dust, particularly when riding

or cycling, a statement very frequently made by hay fever patients. It seemed, therefore, by no means impossible that his case was one of greater susceptibility to the poison of hay fever than those of ordinary non-predisposed persons.

Another suggestion, however, was made to the effect that the carbolic acid contained in the toxin might have been the source of more lasting irritation. In order to test this further a control experiment was made on March 20th, one drop of toxin being instilled into the right eye, and a drop of carbolized water in the other. The characteristic phenomena were produecd in that eye only into which the toxin had been instilled. This fact certainly points in the direction of the conclusion that Dr. T., although not an actual sufferer from hay fever, is more susceptible to its poison than the general run of ordinary non-predisposed persons.

The second experiment which points in the same direction refers to my own case. I have never suffered from hay fever, although not infrequently I am liable to sudden violent paroxysms of sneezing, followed by considerable rhinorrhea, particularly in the early morning at any time of the year. The instillation of the toxin into my left eye had no immediate effect whatever. About six hours after the experiment, however, I was suddenly taken with several very violent fits of sneezing, followed by profuse secretion of watery fluid from my left nostril only, which for a time became almost completely obstructed. At the same time I experienced sensations of heat, burning and soreness in the left half of my nose, all of which were perfectly new to me, whilst in my left eye, although it was not congested, I had a feeling as if I had some particles of sand between the upper eyelid and the eyeball. These symptoms lasted until I went to bed at about 11:30 p. m., but had completely disappeared next morning. It was certainly remarkable that all the symptoms named were restricted to my left eye and nostril, the toxin having been instilled into the left eye.

In order to control this observation, on March 20th at 6 p. m., a drop of pure toxin was instilled into my right eye. In the course of the evening nothing further happened.

Shortly after awakening on March 21st, however, I sneezed a few times, and this was followed by watery secretion from both

nostrils, though undoubtedly more from the right, which for about ten minutes became quite obstructed and then very suddenly quite patent again. There was none of the feeling of heat, burning, and soreness which I had experienced in the left half of my nose on the evening of March 20th. Four or five minutes after the nasal symptoms had quite passed off, I suddenly had a little wheezing in my chest, which was quite audible, but passed off within two or three minutes. The last named phenomenon is one from which I hardly ever suffer.

Although neither of these experiments is in any way conclusive, it would seem probable that I am—to some degree—susceptible to the influence of hay fever toxin, and that the poison, without producing at first any local symptoms in the part into which it was instilled, traveled in minute quantities through the naso-lachrimal ducts into the nose, and there, after the lapse of a few hours, produced the characteristic nasal symptoms.

None of the other gentlemen, as I have ascertained by subsequent inquiry, have experienced any after effects from the instillation of the toxin.

EXPERIMENTS ON PATIENTS LIABLE TO HAY FEVER.

I now come to the experiments made with toxin and antitoxin in the five persons suffering at the typical time of the year from hay fever, who kindly submitted to be experimented upon. Owing to Dr. Prausnitz's presence, we had the privilege of not merely experimenting with the artificially produced toxin, but also with the actual pollen of maize collected last year, and with some fresh pollen of grasses obtained quite recently at Genoa, and sent to Professor Dunbar by some hay fever patients, who are now staying in that neighborhood, and have just had their first attack this year.

In the following description the exact times at which the experiments were conducted and the sensations and objective symp oms which were recorded are stated, as they were taken down at the time. Several of the medical men present cooperated in controlling these times, and the results were written down immediately.

Case I.

Mr. L. O., aged about 32, has suffered from hay fever practically all his life. His father was similarly affected. He is the only one of several brothers and sisters to whom the tendency has been transmitted. The attack is quite typical, affecting the eyes and nose, and very occasionally causing asthma. He has been treated in one nostril with the galvano-cautery with practically no effect.

At 2.49 p. m. one drop of a mixture of equal parts of a toxin solution (1 in 1000) and normal horse serum was instilled into the left eye; into the right eye one drop of a mixture of equal parts of the toxin solution (1 in 1000) and antitoxic serum.

3.5 p. m.—Sensation of heat in left eye, caruncle of left eye beginning to swell and to get reddened, itching begins.

3.10 p. m.—No increase in symptoms.

3.10 p. m.—Symptoms of heat, etc., increasing.

3.17 p. m.—Complains much of heat and discomfort in the left eye, antitoxin (one drop) instilled into the left eye, and practically immediately afterward the itching improved, but not the feeling of heat.

3.21. p. m.—Heat has disappeared.

3.27 p. m.—Pollen of maize rubbed into the right nostril.

3.29 p. m.—Itching begins in the tip of the nose.

3.31 p. m.—Irritation increases all round the nose.

3.33 p. m.—Sensation of heat in both eyes, and itching in eyes and nose.

3.39 p. m.—More pollen introduced into the right nostril.

3.42 p. m.—Antitoxin (2 drops) inserted in the right nostril.

3.44 p. m.—Great relief in both eyes and nose.

3.50 p. m,—One drop of mixture of toxin (1 in 500) with equal quantity of normal serum instilled into the left eye, and a similar solution with antitoxin serum into the right eye.

3.52 p. m.—Sensations of heat and itching in the left eye.

3.53 p. m.—In the left eye pricking and general irritation.

3.54 p. m.—Left caruncle again getting very red. Obstruction in the right nostril. Increased irritation and heat in the left eye.

4.0 p. m.—The throat feels uncomfortable; soreness and irritation. One drop of the antitoxin injected into the left eye, the itching stopped almost immediately.

About 5 p m., the sensation of heat returned in the left orbit; then the usual headache began and some slight dyspnoea. At 5.45 p. m., a sneezing attack, but not a severe one, began. In the evening the usual feeling of lassitude was experienced, always present in a greater or less degree in the patient's case according to the severity and length of the attack. (The information about these later effects was kindly communicated to me by letter next morning.)

Case II.

Dr. P., aged 26. Several members of the family have hay fever, and he has suffered for about fourteen years from genuine hay fever at the typical time, with the characteristic symptoms in eyes and nose. He has once had asthma at the close of an unusually severe attack of hay fever. Treatment with the galvano-cautery undertaken seven years ago was successful for two years.

3.6 p. m.—One drop of a mixture of equal parts of a toxin solution (1 in 500) and normal serum was instilled into the left eye; into the right eye 1 drop of a mixture of equal parts of a toxin solution (1 in 500) and anti-toxic serum. The right eye remained absolutely normal throughout.

3.9 p. m.—In the left eye sensation of burning and itching.

3.10 p. m.—Left caruncle red and swollen.

3.12 p. m.—Caruncle and lower edge of lower lid of left eye red and much swollen; conjunctival vessels injected.

3.29 p. m.—One drop of antitoxic serum injected into the left eye.

3.30 p. m.—Itching and burning nearly gone.

3.45 p. m.—Swelling and suffusion of left eye decidedly less.

3.37 p.m.—Into the left nostril some maize pollen was introduced.

3.38 p.m.—Tickling sensation in the nose; desire to sneeze.

3.44 p.m.—Patient sneezed once.

3.54 p.m.—Rhinoscopic examination: Injection of the left inferior tubinated bone; watery fluid running down from the

middle fossa; mucous membrane swollen; right nostril quite normal.

3.56 p.m.—Increase of nasal symptoms; a good deal of rhinorrhea, two sneezing attacks, constant desire to sneeze.

After this the symptoms very gradually abated, and at about 4.30 p.m. matters had almost returned to normal conditions.

It ought to be stated there that Dr. P., who has often experimented on himself, informs me that his susceptibility has —at any rate transitorily—been considerably diminished since, a week ago, 1 c.cm. of antitoxin was injected subcutaneously into his left arm.

Case III.

Mr. S., aged 28, has for nearly twenty years suffered from genuine hay fever, nose and eyes alone being affected; no hay asthma. It always comes on in June. The nasal mucous membrane, when I saw the patient (March, 1902), was considerably swollen. He submitted to prophylactic galvanocaustic treatment of the nasal mucous membrane in April last, but the result was absolutely negative, the hay fever being as bad as usual last season.

2.57 p.m.—Into the left eye one drop of a mixture of equal parts of a toxin solution (1 in 1,000) and normal serum was injected; into the right eye one drop of a mixture of equal parts of the toxin solution (1 in 1,000) and antitoxic serum. No irritation felt in either eye.

3.6 p.m.—Into the left eye one drop of a toxin (1 in 500) and normal serum mixture; into the right eye one drop of a toxin (1 in 500) and antitoxin mixture.

3.8 p.m.—In the left eye itching, burning, and desire to rub it.

3.11 p.m.—The sensation is passing off.

3.15 p.m.—Conjunctival vessels of left eye much congested. In the right eye a slight feeling of irritation, which passed off quickly.

4.20 p.m.—The patient feels sure that he is suffering from an attack of hay fever.

3.29 p.m.—He has all the ordinary dull fee ing of recovery from an attack of hay fever.

3.36 p.m.—Symptoms practically disappeared.

CASE IV.

Miss C., aged 21, has suffered for many years from genuine hay fever at the typical time with the characteristic symptoms in the eyes, nose, and chest. She always suffers severely, and was once treated with the galvano-cautery with transitory effect.

3.14 p.m.—Into the left eye one drop of a mixture of equal parts of a toxin solution (1 in 1,000) and normal serum was injected; into the right eye one drop of a mixture of equal parts of the toxin solution (1 in 1,000) and antitoxic serum.

3.20 p.m.—Left caruncle red. Conjunctival vessels injected. Feeling of irritation in the right eye.

3.25 p.m.—No increase of symptoms. Into the left eye one drop of toxin (1 in 500) normal serum mixture; into the right eye one drop toxin (1 in 500) antitoxin mixture.

3.32 p.m.—In the left eye, feeling of irritation; in the right eye, none.

3.37 p.m —Into the left eye one drop of antitoxin.

3.39 p.m.—Left eye rubbed with maize pollen.

3.40 p.m.—Throat getting sore, just like in an ordinary attack.

3.44 p.m.—In the left eye feeling of irritation.

3.45 p.m.—Left nostril rubbed again with maize pollen.

3.46 p.m.—In the left eye increase of irritation.

3.49 p.m.—Left caruncle fiery red. One drop of antitoxin into left eye.

3.53 p.m.—One drop of antitoxin nto the left nostril.

3.55 p.m.—Patient feels on the whole more comfortable.

4.2 p.m.—Left eye still irritated. One drop of antitoxin.

4.3 p.m.—Irritation in left eye has ceased.

4.8 p.m.—Rhinoscopic examination: Left nose completely obstructed, mucous membrane over middle turbinated bone so much swollen as to actually touch the septum. Appearance as often seen in genuine hay fever. The right nostril wide open; normal.

4.11 p.m.—Two drops of antitoxin into the left nostril.

Toward the close of this experiment the patient was ex-

ceedingly depressed and presented the characteristic appearance of hay fever patients during a severe attack.

The patient informed me on March 20th that she had felt very ill, just as in a typical attack of hay fever during a little while after the experiment, but that the symptoms had gradually passed off in the course of the evening, and that now she felt quite well again.

Case V.

Miss K., aged 45, was seen in June, 1902, a most typical case of hay fever, very characteristically described by the uncommonly intelligent patient. There is a history of hay fever in other members of the family. She herself has suffered for over 20 years with the characteristic symptoms in eye, nose, throat, and chest.

3.22 p.m.—Sniffed up grass pollen recently obtained from Genoa. No result.

3.30 p.m.—Into the left nostril one drop of a toxin solution (1 in 500).

3.35 p.m.—Feels a little uncomfortable.

3.36 p.m.—Uncomfortable sensation has increased in both nostrils.

3.38 p.m.—Great desire to sneeze.

3.41 p.m.—Into the left eye a mixture of equal parts of toxin (1 in 500) and normal serum; into the right eye one drop of a mixture of equal parts of a toxin solution (1 in 500) and antitoxic serum.

4.20 p. m.—Left eye itching; left caruncle much suffused; right caruncle abnormally pale.

4.3 p. m.—Into the nostrils one drop of toxin solution (1 in 500).

4.6 p. m.—Itching in the left eye has ceased, the right nostril is beginning to tickle; typical sensation of irritation. Feeling of itching at the back of the soft palate, which increased during the next two minutes.

4.12 p. m.—The patient complained of the frontal headache from which she usually suffers during the hay-fever attack. In the nostril nothing is experienced but the ordinary irritation.

During the afternoon and evening the tickling continued,

the patient sneezed twice at 4.45 p. m., again at midnight, and at 8 a. m. on the following morning. In the evening throat, nose, and ear on the right side felt sore and tired, as they do after a bad attack of hay fever. Next morning patient still felt as if she was suffering from a slight summer attack of hay fever.

(Information as to after-effects given by letter, March 20.)

CONCLUSIONS.

From the above experiments the following conclusions, I think, may fairly be drawn:

1 There can be no doubt that Professor Dunbar has succeeded in extracting from the pollen of certain grasses (maize, wheat, rye, anthoxanthum odoratum, agropyrum repens, cynosurus, etc.), a toxin which when instilled into the eyes or nostrils of people predisposed to hay fever, produces in these parts the characteristic subjective and objective symptoms of the disease.

2 The toxin, when injected into the eyes or nostrils of people not predisposed, produced, in the great majority of cases, no symptoms whatsoever, but it certainly appears from Dr. T's and my own experiences as if there were instances of transition in which, although the persons experimented upon never suffer from typical hay fever, they are yet more susceptible to the influence of the toxin than the ordinary run of people.

3. The effects of the toxin in the people suffering from hay fever are as variable in intensity as are the attacks of the affection itself, both with regard to the local and the constitutional symptoms.

4. Professor Dunbar's antitoxin certainly produces immediate disapperance of the subjective, and after a few minutes great amelioration of the objective symptoms.

5. The mixture in equal parts of a toxic solution (1 in 500) and the antitoxin serum suffices to neutralize the specific effects of the toxin.

6. The effects of the antitoxin appear in some instances to be sufficient to prevent a reappearance of the subjective symptoms, whilst, in other instances repeated instillations of the antitoxin were required to produce ultimately the return to normal conditions.

It is hardly necessary to add that this can only claim to be a preliminary report on a very interesting and important subject. We are, as it were, on the threshold of facts which, if our expectations should be realized, would in many respects open a new era for the better understanding and more efficient treatment of a most troublesome and common disease. At the same time, it cannot be too emphatically stated that all we know at the present is not sufficient to build excessive therapeutic hopes upon, and this for the following reasons:

1. We do not yet know what the nature of the special predisposition is which makes one person react violently to the influence of both the natural pollen and of the artificially-produced toxin, whilst it leaves another quite unaffected.

2. Whilst it may be justly hoped that it will be possible to produce an even more effective serum no guarantee can at present be given, nor do we know for certain whether it will be possible to produce such antitoxin in sufficient quantities to use it extensively. It may, however, confidently be hoped that such will be the case.

3. Whilst the antitoxic serum as at present produced quickly neutralizes the local effects of the toxin, it is impossible to foretell—and on this point I wish to insist very strongly—whether in cases of genuine attacks of hay fever, an even more powerful serum than that at present prepared, applied by way of instillation into the affected mucous membranes, or by subcutaneous injection or by internal administration, will arrest all the symptoms when once fully established, and even if it should do so, whether the effect will be lasting, or whether the symptoms may not return.

4. Finally, it is equally impossible to foretell whether by the prophylactic application of a very powerful serum we shall succeed in altogether preventing the actual outbreak of an attack in those specially predisposed.

I know I am in perfect accord with the original investigator in giving this strong warning against premature hopes which ultimately may not be fulfilled. At the same time, I think there cannot be any doubt that Professor Dunbar has made a very interesting and important discovery, which, it may be devoutly hoped, in the interests of many thousands of sufferers, will ultimately lead to the development of an effectual specific treatment of this very troublesome affection. He has most kindly promised to keep me *au courant* of his further experiments, and I, too, hope to continue my own researches. When anything new can be reported, I hope to return to the subject.

XXX.

CHAIRMAN'S ADDRESS BEFORE THE INDIANAPOLIS MEETING OF THE MIDDLE SECTION OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, APRIL, 8, 1903.

By L. C Cline, M. D.,

INDIANAPOLIS.

PROFESSOR OF RHINOLOGY, LARYNGOLOGY AND OTOLOGY IN THE MEDICAL COLLEGE OF INDIANA.

Gentlemen:—It affords me great pleasure to welcome you to this, our "no mean City" situated as it is at the center of our nation's population. The time that is consumed in coming together, presenting and discussing subjects pertaining to our field of work is of as great value to us and to those we serve as are the great commercial and industrial conventions to their followers.

Our best work does not emanate from our own efforts in our daily routine, but comes through mingling with our fellow-workers, exchanging views, giving and receiving kind but firm criticism of our theories, modes of operation and inventions. When we look over a period of two decades we marvel at the great strides and changes that have occurred in the pursuit and practice in all branches of our profession, and especially in our own.

It has been said that the American doctor with all his energy and his push is too prone to take up and adopt all the fads and theories of practice without first giving the subject due consideration. While this in many instances is true we are just as eager to correct our mistakes and set up a signal of warning as we are to adopt them. For example we have seen the arrival and departure of the sulphuretted hydrogen gas bag which was reported to cure all tubercular and germ

diseases of the air passages and alimentary tract. We have witnessed the craze, to remove ovaries by our friends in the abdominal field, come and go. We have seen the great wave of treatment which expresses itself in the indiscriminate use of the saw and cautery sweep the country, I am sorry to say still raging with some superficial and in discrete manipulators, whose sole object is to open the breath-way quickly regardless of consequences.

The physiologic functions of the turbinates and nasal mucosa have been partly or wholly destroyed in many noses by the indiscriminate use of the cautery or cutting instruments for the relief of existing disturbances, whereas if the cases had been more carefully studied and the treatment directed toward the true cause the nasal membrane could have remained intact, and after the relief of the congestion the patient left with a no. ose capable of preforming its physiologic unctions. I do not mean to decry the use of cautery, the scissors and saw, but their indiscriminate use in non-selected cases.

We have been passing through an age of fads and the departments of medicine and surgery have contributed a good share to their support. In our zeal to push forward and present something new we are too prone to act upon suggestions without due consideration of the surrounding influences that may have a bearing on the subject. We need to lay more stress on the etiology and pathology of disease.

The importance and rapid development of appliances and methods of treatment of the upper air passages and the commercial shrewdness of apparatus and instrument makers have been the cause of thousands of doctors equipping themselves with cautery-batteries and other apparatus without preparation or special knowledge of the normal and abnormal structures with which they were to deal, attempting to cure all the disturbed conditions of the air passages with the liberal use of cocain and the cautery-knife, snare or scissors. Time and disappointment have about corrected those erroneous notions and the cautery has taken its place, with those that are informed, and is only occasionally used in selected cases. Specialism is looked upon by those older in the profession who have not had the advantages of

modern teaching, as minimizing in a narrowing or contracting sense, while quite the contrary is true with those that are up in the work. The specialist should not only have a thorough knowledge of his subject but he should possess a knowledge of general medicine. Some claim that the specialist exceeds his rights when he looks beyond the local lesion and should refer his patients back to general medicine for further treatment. But as a matter of fact a large per cent. of the local lesions are due to systemic conditions.

A specialist should be able to analyze and group his cases and determine which are due to local lesions and what local lesions are due to systemic conditions. The specialist that does not take into account systemic conditions is not worthy of the name of specialist.

In anticipating what I would say in addressing you on this occasion nothing has appealed to me more than to call brief attention to some etiological factors and the results obtained by the different methods of treatment of a certain class of patients that apply to us for relief. It is quite noticeable that during the last few years more and more attention is being paid to the study of general conditions with local manifestations.

It is important that we should possess an intimate knowledge of all adjacent and associated structures together with their physiologic relations to each other as well as the general system. It is becoming neccessary to devote more time and attention to the chemistry of the fluids of the body and their influence as manifested in local disturbances. More attention is being paid to the nutritive and eliminating functions of the body. We are all more or less familar with cases of infiltrated, congested and irritable mucous membranes following influenza or grippe, and know that some of these cases resist all local measures of treatment until the general system is taken into account and the secretive, eliminative and nutritive functions are re-established. It is altogether likely that changes take place in the blood through the influence of the toxins, and that these new compounds are deposited in the tissues. In many cases treatment will bear out this view as hygenic and alterative measures produce the best results. We are all more or less acquainted with the in-

creased congestion and glandular activity in the upper air tracts in diseases of the heart, the kidneys, liver and gastro-intestinal tract.

When we look at the local lesions from a broad or general medical standpoint, excluding congenital or acquired deformities, we are suprised at the great number of cases that have some systemic factor in their etiology.

The condition to which I wish to direct my remarks, more particularly, is that designated by the terms lithemia, the uric acid or gouty diathesis. To my mind it is questionable as to whether there is a hereditary tendency to lithemia or gout, or whether the fault is not due to our method of living and the large consumption of meat. There is never an excess of nitrogen in a meatless diet, but with a diet largely of flesh there is an excess of nitrogen and this introduced into the system, goes on accumulating in uric acid compounds until its presence in the blood causes a high blood pressure and its deposition in the tissues and joints.

Faulty digestion does not necessarily mean an increase of uric acid, but it does mean other toxic conditions, the influence of which is often manifested in inflammatory attacks of the membranes of the upper air passages or some weakened parts of the mucous tracts.

Hence it follows that exposure to inclement weather, fatigue or mental worry, dietetic, sexual or alcoholic excesse will suffice to precipitate a catarrhal attack by impairing digestion and favoring toxic infection. Were it not for these conditions the system would be able to withstand the attacks of most germs that are awaiting their opportunity to get into the tissues and the circulation.

My observations have led me to believe that one of the most common predisposing causes of a large per cent of the diseases that are met with in the nose and throat is associated if not largely due to uric acid or other toxic influence from faulty digestion.

We should classify our cases and study more carefully the influences that lead up to the various local lesions with which we have to deal, typical examples of which are found in naso-pharyngeal obstructions, causing impairment of the voice, sense of smell and hearing. The systemic condition

should receive at least an equal if not greater share of our attention. We should not content ourselves with the relief of local conditions only, but measures that are far reaching in their effects must be studied and judiciously applied.

While we feel assured that we possess a correct knowledge of the local lesion in a given case, still it is necessary to investigate every factor that may have contributed to the local disturbance. A patient's surroundings, his business and social relations, his mode of exercise and recreation, his habits of dress and care of skin, and more than all else, his diet and manner of eating should receive our careful attention. I am fully convinced that more of the ordinary ills of our American people can be laid at the door of our dietetic follies than any other cause.

We consume too much nitrogenous food; we eat too much meat, the auto-toxemic state that follows is quite sufficient to precipitate catarrhal attacks of the mucosa and glandular strictures of the upper air tracts. Many of the incipient cases that apply to us for treatment would get well without drugs or surgical interference with a rigid correction of diet, exercise and hygienic influences. I might cite many cases illustrative of the curative influence of first directing attention to the toxic and lithemic conditions, but will not presume upon your intelligence and further consume your time. I hope that these remarks may not be in vain, but may stimulate your renewed interest in investigation and practice along the lines here indicated which will, if carried out, in many instances obviate the necessity of the more radical use of caustics, the cautery and cutting instruments,in the early stages of a large group of cases.

Willoughby Building.

XXXI.

CASE OF REMOVAL OF COCHLEA AND SEMICIRCULAR CANALS.—RECOVERY.

By R. L. Culbertson, M. D.,

ZANESVILLE, OHIO.

Mr. H. N. (Greek), age 22 years, consulted me Nov. 9, 1902. He stated that two months previous he took cold and had pain in the left ear. Soon after the ear "broke" and discharged but there was no pain back of the ear.

At that time he was in Buffalo, N. Y.; his otologist used ice applications on the mastoid. After remaining in Buffalo four or five weeks he came to Zanesville and consulted another otologist who continued ice applications several weeks and used leeches also.

He then consulted the writer who decided that the case was one of severe mastoid disease Temperature 100.° The day following I performed a Stacke-Schwartze operation, finding the cells shallow and much diseased, and the ossicles entirely necrosed, I removed all of antral cells, all mastoid cells and a small portion of inner plate of mastoid, and a small portion of necrosed bone from about the facial nerve. No paralysis followed.

I used an electric battery, one pole being placed in the neck and a small curved needle attached to the other pole. The needle was run carefully over the course of the facial nerve and when it would come in contact with the nerve the face would jerk. This assisted in preventing injury to the facial. I do not know if this has been used heretofore. I would suggest that the curett be connected with the battery and thus show when facial is in danger.

Nov. 12, temperasure 100. Dressing removed Nov. 13, temperature 99. Nov. 19, temperatuie 99 1-5.

Nov. 20, Operated again and removed all the tip and all

the inner plate of mastoid; all bone over lateral and transverse sinus as far as occipital bone; portion of bone over the temporal lobe about the size of a silver half dollar; also zygomatic cells and part of bone from around facial, slightly injurying facial (recovered from this in a few days).

Nov. 21, temperature 99 1-5; Nov. 29, temperature 98 2-5: Dec. 1, 2, 3, 4, 5, 6 temperature normal. Healing was rapid, though there were some redundant granulations which I touched with very strong solution of nitrate of silver. Temperature continued normal for some time but there was still a purulent discharge and I concluded that there was necrosed bone beneath the healthy granulations, although the temperature was normal. Patient complained of sounds in ear like locomotives whistling and blowing off steam, birds singing, etc. Also extreme dizziness causing him to grasp something to keep from falling.

Dec. 21. Operated again, removed nearly all the tegmen tympani, also all the cochlea and semicircular canals and diseased bone from around them (all cells in this region were removed), removed all the bone from around facial as it was diseased throughout the path of the canal excepting the portion in the tegmen tympani; facial nerve was cut as this was unavoidable in this case. Bone over carotid canal found to be healthy. Portion of petrous bone, back of canals and next cerebellum, removed as far as internal aspect of internal auditory canal, all bone between lateral sinus and Fallopian canal removed and portion over jugular bulb, bulb high-placed, vaginal process scraped. Slight injury to sinus and jugular at bulb. This was tightly plugged and all hemorrhage arrested, and wound dressed with iodoform and steerate of zinc and iodoform gauze.

Dec. 23, temperature 101 1-2. Dec. 25, removed dressing and plugs. No hemorrhage, wound looked well. Dec. 26, temperature normal; no dizziness, no nystagmus; eyes not turned to left; patient sat up in bed.

Dec. 30, temperature normal; no dizziness, no nystagmus; wound granulating nicely.

Jan. 5, temperature 99. Jan. 8, normal temperature. No fever after this. Jan. 25, bone all covered with granulation.

Walks normally; no diziness. March 20, case discharged cured. Facial paralysis slightly improved.

CASE II. Removal of cochlea, the semi-circular canals remaining. Sister M. De C., age 21, referred by Dr. Sutton of this city, presenting a well marked case of mastoid disease resulting from influenza.

July 22, 1901, operated and found lower cells of mastoid healthy and cells very shallow. Disease located in antral cells and cavity of tympanum. Malleus and incus removed as they were diseased. Stacke-Scawartze operation performed.

July 28, temperature normal; Aug. 10 temp. 99 4-5; very offensive pus discharge, patient very dizzy.

Aug, 15 no improvement.

Aug. 16, opened all mastoid cells; no disease below; found few more diseased cells in antrum and tegmen tympnni; found cochlea badly increased and removed it entire; semicircular canals normal, removed small portion increased bone from over facial. Facial not improved (used electric battery inlocating facial).

Aug.20, temperature normal; dry dressing; wound slowly granulated and some offensive discharge for several months due to escape of labyrinthine fluid which formed an excellent medium growth of germs. This gradually ceased and wound closed and she made a complete recovery save that she was totally deaf in that ear.

XXXII.

GENERAL SEPTIC INFECTION OF NASAL ORIGIN.*

By A. Logan Turner, M. D. (Edin), F. R. C. S. Ed.,

LECTURER ON DISEASES OF THE THROAT, NOSE AND EAR, SCHOOL OF MEDICINE, EDINBURGH.

Although the subject suggested by the above title cannot be regarded as a new one, it is one of very considerable practical importance. The possibility of general septic infection arising from an intranasal lesion may very naturally be overlooked. That a type of illness presenting a train of symptoms, and indeed simulating a grave pathological condition, may have its origin in some simple affection of the nasal chambers, has already been described. So insignificant, indeed, may be the nasal lesion, that the patient remains unaware of it, and his physician's attention may possibly be only directed to it accidentally. The similarity of the symptoms in one case to those of ague, in another to typhoid fever, and in a third to pulmonary phthisis, adds additional interest to the study of such cases. It is with the object of again drawing attention to the possible nasal origin of some of these obscure symptoms that the following cases are recorded:—

Case 1.—Miss A., aet. 21, was seen, at the request of Sir John Tuke in consultation with Dr. George A. Gibson, at the end of June 1902. About six weeks before that date the patient had a sharp attack of influenza. This passed off but apparently she did not completely recover her usual state of health. During the succeeding four weeks, her temperature consistently showed an evening rise, and sometimes even in the morning it was above normal. In the evening, it would reach 101° or 102° F. She complained also of night sweating. Save for these symptoms and some indefinite pains in the back of the head, she was otherwise apparently in fairly good

*From Edinburgh Medical Journal, March, 1903.

health. The question of the possible existence of pulmonary phthisis naturally suggested itself, but more than one examination of the lungs failed to reveal any physical signs in the chest.

There was no cough, but in the morning the patient was able to bring up from the back of the nose and the throat a moderate quantity of purulent-looking secretion. She did not complain of any bad taste or fetid odor. An examination of the secretion, made in the Laboratory of The Royal College of Physicians, showed that there were no tubercle bacilli present. A culture which was made gave, however, a pure growth of staphoylcocci in twelve hours, while numerous other organisms could be detected microscopically. I was asked by Dr. Gibson to make an examination of the nose.

By anterior rhinoscopy, no pus was detected in either nasal cavity, nor did the dependent position of the head bring about any flow into the nose. Some muco-purulent secretion was visible in the naso-pharynx. The larynx appeared perfectly normal. Transillumination of the maxillary sinuses showed the left antrum to be opaque, while the right illuminated brightly. In order thoroughly elucidate the case, it was decided to puncture and wash out the left antrum, because it presented such a distinct contrast to the right on transillumination. This was done through the outer wall of the inferior meatus, with a fine trochar and cannula. The result was negative, the lotion being returned perfectly free of secretion. Daily syringing of the nose was commenced, followed by the use of a menthol and parolein spray. The headaches disappeared and the temperature gradually fell to normal, without any irregular rise. The patient rapidly improved, and the discharge from the back of the nose gradually ceased. In the month of August she wrote to inform me that the nasal secretion was reduced to a minimum, and that she was practically well.

Dr. George Gibson has informed me of another case which he was asked to see. The patient was a lady whose condition more than one physician had pronounced to be tuberculous. Examination of the nose and throat led him to suspect these areas as the source of the infection. Suitable treatment was followed by disappearance of her symptoms.

CASE 2.—Miss B. was sent to me by Dr. Moorhouse of Sterling in May, 1902. He kindly furnished me with the following history of the case:—Five years before, she suffered from erysipelas of the face, and her present illness appeared to date from that time. At any rate, since her attack of erysipelas, she had always been "out of sorts and nervous," afraid to go to church or attend public meeting of any kind. In September, 1902, however, fresh symptoms developed, and she began to suffer from chills, followed by a sweating and pyrexia. When examined by Dr. Moorhouse, nothing of a serious nature could be detached in the chest or in any of the internal organs. On questioning her more closely, he learnt that she complained of a nasal discharge, accompanied by an offensive smell. At the same time there was a considerable accumulation of secretion at the back of the nose and in the throat in the morning. At that time he concluded that she was suffering from a mild form of septicemia, in all probability due to the intranasal condition. Examination of the nose revealed nothing of an unusual nature. A nasal douche containing bicarbonate of soda and boracic acid was ordered to be used morning and evening, and very considerable improvement at once manifested itself, although some nasal discharge still continued. In November of the same year, she felt so much better that she submitted to the extraction of eight teeth. While she was under gas, the dentist perforated the left antral cavity through the socket of one of the molar teeth, but no pus was detected in that cavity. When seen by myself in May, 1902, she still complained of post-nasal discharge, and had a tendency to clear her throat. On examination, nothing was found to lead to a diagnosis of accessory sinus suppuration. There was no pus in either middle meatus, and both antra illuminated. Upon the floor of each nasal cavity there was some muco-purulent secretion. The nasal syringing was continued, and a spray of 5 per cent. protargol solution ordered.

I had a further opportunity of examining the patient in January of the present year; she expressed herself as being in better health than she had been during the last two or three years, and she no longer suffered from rise of temperature. There was still a little naso-pharyngeal catarrh present.

Both these cases are of undoubted clinical interest, and we are justified in concluding, when the result of treatment is considered, that both of these patients suffered from a mild form of septicemia with the source of infection in the nose and naso-pharynx. It is true that neither of them presented symptoms of a serious nature; nevertheless in both of them—especially the former—the symptoms were of a character to cause some anxiety as to the possible existance of tuberculosis. The importance of recognising a simple nasal lesion as the origin of symptoms which forcibly suggest the presence of phthisis, needs no comment. It is interesting to note, however, that in some of these obscure cases there may be an entire absence of any symptom or signs pointing to the presence of an intranasal affection. Not only may there be nothing to turn the physician's attention to the nose. but the patient himself may fail to recognize the fact that there is any abnormal condition of his upper respiratory passages. Hajek* records a case which affords a striking example of this. The patient was an educated man, who had on several occasions consulted eminent physicians regarding the state of his health. The chie symptoms complained of were general nervous irritability, and a tendency to become angered against his friends whom he most respected. He slept badly, his feet remained unusually cold, while the upper part of his body, especially his face, became congested and hot. His pulse beats were much accelerated, numbering, as a rule, from 130 to134 per minute At meals, the cardiac pulsations and congested state of the skin would cause him so much discomfort, that he was often obliged to leave the room. His heart and lungs had frequently been examined, but no evidence of disease had ever been detected. Apparently the patient had never complained to any of his medical advisers of his nose, and even when closely questioned by Hajek, before any examination had been made, he firmly maintained that he had nothing abnormal there. Puncture of the left antrum of Highmore and douching of the cavity was followed by the evacuation of a quantity of extremely foul-smelling pus. After the sinus had been opened and drained, all his symptoms entirely disapeared.

*"Path. u. Therap. der Entzund. Erkrank. der Nebenhohlen."

That the presence of a foul-smelling discharge may exist in the maxillary sinus, without the patient being in the least aware of the fact, I have had more than one opportunity of of observing. In one case the fetor was so marked when the cavity was opened, that the bystanders were compelled to stand back, the fetor resembling that of a stinking abscess about the appendix. The patient expressed surprise afterward, that such a state of affairs could have existed. It is evident, therefore, that the physician may receive no assistance from his patient as regards the nasal origin of some of these cases of general septic infection.

Some years ago, Dr. William Carter* of Liverpool published a series of interesting cases of fever of a septic type, in which the origin of the malady remained for a long time obscure. One of Carter's patients was a medical man, living in a healthy seaside town, under conditions which were apparently thoroughly favorable, his house being a good one and well situated. Every day, about a half an hour after breakfast, he expectorated with some difficulty a little mucus, after which he was attacked by rigors which recurred daily and almost with the regularity of ague. He continued his professional work, although with much discomfort, while his axillary temperature was as high as 103 F. The persistence of this condition led him to suspect tuberculosis, but a careful examination of all his organs failed to reveal any physical signs. The only lesion that could be discovered was a catarrhal condition of the mucous membrane of the left nostril. He commenced irrigation of the nose with a strong solution of liquor sodae chlorinatae, and used a snuff of boracic and bismuth powder. Almost at once after the commencement of the local treatment, the elevation of temperature ceased, and his symptoms completely disappeared. In another of the cases reported by Carter the symptoms were of a more acute nature, and it is also the employment of antiseptics in the nasal cavities was followed by amelioration and finally cure of the conditions. In a third case, the symptoms from which the patient suffered suggested the existence of typhoid fever, but examination of the internal organs showed no evidence of this. A rhinoscopic examination, however, revealed the

*Lancet, London, 1895.

presence of a piece of necrosed bone. After radical measures had been resorted to, there was a final disappearance of the symptoms.

As examples of general septic infection occurring in fetid atrophic rhinitis, or ozena, one may cite the following examples, one reported by Permewan* of Liverpool, the other occurring in my own practice. In Permewan's case, symptoms of general malaise and loss of appetite were complained of. The daily temperature was always 100 F., rising in the evening to 102 or 103, while the pulse rate varied from 100 to 110 per minute. The source of the infection could not be established, until finally the patient acknowledged that for years his nose had given him considerable trouble, necessitating the frequent use of numerous handkerchiefs. There were intervals when he considered himself perfectly well, but recurrences took place. The nose and naso-pharynx were fi led with offensive crusts. The removal of crusts and thorough irrigation of the nasal cavities, were followed by eminently satisfactory results, and at the end of three weeks of careful treatment the patient's general condition was excellent. The patient who came under my own care was a growing lad, who was in the habit of frequently using a thermometer of his own. He also suffered from fetid atrophic rhinitis, and on several occassions he reported the occurrence of rigors, with his temperature rising to 103° and and even to 104° F., with periods of general malaise. The authenticity of this patient's own observations was proved, as on two occasions, while he remained under treatment in hospital, similar rigors were observed. The possibi ity of tuberculosis and of malaria was discussed, but both were excluded. Another interesting point in this case, and one which the patient himself was able to observe, was that if irrigation of the nose was not carried out in the morning, but delayed until midday, a rigor was not infequently a sequel. It should be added that in this case pulmonary tuberculosis developed three years after the date of the above observations.

No one can gainsay the practical interest which lies in these cases, and which certainly point to the value of making an intranasal examination in septic conditions of doubtful origin. It is possible, too that a regular use of the thermometer might reveal more frequently the occurrence of general symptoms in septic conditions of the nasal cavities.

Liverpool Med. Chir. Journ., July, 1889.

XXXIII.

AN ADDITIONAL COMMUNICATION ON THE CAUSE AND SPECIFIC CURE OF HAY FEVER.*

By Dr. Dunbar,

Translated by Clarence Loeb, A. M., M. D., St. Louis.

About a century ago, Bostock called attention to a disease which appears in our latitude every year about the end of May or beginning of June, which usually lasts about six to eight weeks, and which consists of a catarrh of the ocular, nasal and pharyngeal mucous membrane accompanied by sensations of tickling, itching, burning and heat. The nasal affection causes severe, long-lasting attacks of sneezing. In many patients there are also asthmatic attacks. These and other irritative symptoms on which we cannot dwell here, are so severe in many patients as to make it impossible for them to fulfill their daily duties during the time specified.

In literature this disease is often designated as "Bostock's catarrh," but many other names are assigned, according to the etiologic standpoint of the author. As a rule the name "hay fever" has been attached to the process, and although, as will be seen, this is not entirely etiologically correct, it is used in this article. Inasmuch as many thousands of patients have become accustomed to call themselves hay fever patients, it would be difficult to change the name.

In an article† which recently appeared the author discussed the different hypotheses and theories in regard to the cause of hay fever, and quoted the literature. He can therefore confine himself to refer, without quoting the literature, to the principal theories only so much as is necessary to understand the experiments which follow.

*From the Deutsche Med. Wochenschrift, p. 149, No. 9, 1903.

†The Cause and Specific Treatment of Hay Fever. Munich and Berlin. R. Oldenbourg. 1903.

With few exceptions, the author argued that the disease of hay fever requires a certain individual predisposition, but that the recurrencs of each attack was due, even in predisposed individuals, to the influence of an external exciting factor.

The early heat of summer, dust or other purely mechanical substances, emanations from grass or hay, and finally even micro-organisms have been suggested as this factor. For about 30 years the chief explanation has been that pollen excited the attacks of hay fever, based on the investigations of Elliotson and Blackley.

Later on, doubts arose as to the connection between pollen and hay fever, and the number of authors increased who denied that pollen caused the attacks of hay fever. At present the tendency is to regard hay fever as an infectious disease. Sticke expressed the present prevailing theory in the following words: "It was too little observed how advantageous, not to say necessary, was the supposition of a living infectious agent in the explanation of the typical course of hay fever when we neglected the theory and discovery of Helmholtz (who considered micro-organisms to be the cause of hay fever)."

The author, who for seven years has been investigating hay fever, started from the standpoint that it would be possible to arrive at correct conclusions in regard to the cause of hay fever, only if it were possible to separate the factor completely from the foreign elements, and by means of this factor, independent of temperature and metereologic conditions, and at a time of the year different from the typical one, to cause all the symptoms of hay fever, and furthermore, if it were possible to prove that it attacks only such persons who suffer from hay fever and all others are immune to it.

He would like to state that the pollen of rye, barley, wheat, rice and corn, and all other graminous substances which cause symptoms of hay fever in those who are usually subject to hay fever attacks (for short hereafter to be called hay fever patients), are entirely innocuous to other persons. Furthermore, the grains of pollen of all other plants examined by him, among them the rose, linden, absinthe and many others which other authors claim are noxious, were

found to be without any action on hay fever patients.

By special experiments it was found, furthermore, that not only the mucous membrane of the hay fever patient which was supplied by the trigeminus reacted to the hay fever poison, as has lately been supposed, but the other mucous membranes also, e. g., that of the rectum.

By experiments made in December and January the author was able to demonstrate that the hay fever patients were sensitive to the hay fever poison not only in May, June and July, as Stecker thought, but at all other seasons of the year.

By treating the noxious pollen with ether and other chemicals, the author was able to show that its active principle was not the etherial oleaginous constituent, as the early authors thought. The active principle was found to be completely insoluble in alcohol and ether and more or less easily soluble in water or saline solution according to the kind of grass; it was readily soluble in tears, nasal secretions, saliva and blood serum.

From the collected results of his experiments, the author is led to the conclusion that the active principle is represented by the starch bodies, which, by the way, are not composed of pure amylum, which make up the chief constituent of the pollen grains. The active principle, probably contained in the so-called amylum bodies, seems to be a kind of albuminous substance.

Only one of the numerous experiments, which will be found in full in the cited article, will be mentioned here as an example of how the solutions of the pollen grains affect the hay fever patients. 1/10 c.c. of a solution of pollen toxin in 1 c.c. of water was injected hypodermically in the forearm of a hay fever patient. One minute after the injection the patient had a sensation of dizziness; 15 minutes later he sneezed severely seven or eight times; 2 minutes later a spell of coughing appeared. This attack was similar to whooping-cough and, in the space of about one half hour, returned several times, at first lasting some time but later in short attacks of a few minutes' intervals At the same time the patient had a raw, scratching feeling in the air passages. He said he felt as though he had inhaled sulphuric acid gas.

Simultaneously with the coughing appeared a discharge

from the nose. Both nasal passages swelled up in the space of a few minutes so that the air was absolutely unable to pass through.

The conjunctiva of both eyes was at this time injected and chemotic, and the eyes teared excessively. The gums itched so severely that he gritted his teeth. At the same time the face of the patient swelled and had a cyanotic color of such a degree that he could hardly be recognized. The bluish-red, discolored ears, especially, were very edematous. The veins of the face were very prominent. The patient felt a strong pressure in the ear. Examination of the ear showed a normal drum.

A quarter of an hour after the injection the patient was aphonic. Laryngeal examination revealed a great redness of the pharyngeal and laryngeal mucous membrane.

Meanwhile, the patient felt pain in the breast and simultaneously an audible inspiratory stridor appeared. Patient had the feeling of a beginning bronchitis. He coughed out a small amount of a thin, slimy expectoration. He then experienced an extraordinarily severe perspiration, so that the sweat poured from his forehead. The respirations were quickened (28-32 a minute) and made more difficult; the pulse rose to 92 (normally 68), while the temperature of the body was normal (36.8° C.).

Fifty minutes after the injection there was an itching over the entire body of the patient. Inspection revealed a superficial urticaria, with eruption over the entire body.

About four hours after the injection the patient felt somewhat better. The dyspnea, especially, had ceased. Still two hours later, a cough reappeared, as well as inspiratory stridor and a feeling of constriction in the breast. Although his temperature was normal, the patient had chilly sensations and a fullness in the head. The urticaria had somewhat disappeared, but a severe erythema was still visible. At this time, and even 24 hours later, the face was very edematous.

The following morning the patient had a feeling of weakness and disinclination for work. In walking and climbing stairs he felt a constriction and pain in the region of the heart, both of which he had never experienced, although accustomed to hard work.

At the place of injection, 20 minutes after it was made, appeared a hard, painless, very red spot, 5 cm. broad. It felt hot. This spot steadily increased in size. In the evening it reached from the elbow to the wrist of the affected arm. No depression remained on pressure. During the night a moist pack was used and the arm elevated. In the morning the swelling had increased to the metacarpal articulations. The circumference, 24 hours after the injection, was 29.5 (normally at this place 27). The swelling began to disappear on the second day after the injection, and had completely disappeared on the fifth day.

This amount of pollen toxin which had caused such a severe attack of hay fever in the case cited, was completely inert in the case of a person, a non-sufferer from hay fever, used for control, when the injection was likewise made in the arm.

The experiments were carried out on three hay fever patients and a number of control persons, under the most varied conditions. I must refer you to the original article for the details. In general, it may be said that all experiences invariably led to the same results irrespective of whether the pollen grains were inspired in their natural condition or their active principles were brought into the eye or nose in an active solution. In hay fever patients symptoms of hay fever always appeared. In others the application of the po len grains or their active principles cause no irritative phenomena.

The author could rest his opinion that the irritative factor, the cause of hay fever, was to be sought in the contents of the grass pollen grains, at the time of his former publication, only in experiments carried out on three hay fever patients and a large number of other persons. In the meanwhile, through the courtesy of the presidents of the Heligoland Hay Fever Association, Drs. A. Thost and M. O. Schultz, he has had a chance to amplify his observations. The following deals with these observations.

The following experiences, which were carried out on Jan. 24th, of this year, deal with eight hay fever patients, two of whom were in the list of patients mentioned above, upon whem experiments had been carried out previously. The con-

trol experiment was made on the same day on fourteen persons who did not suffer from hay fever. Of these fourteen, three proved to be not suitable cases. One suffered from asthma verosum; the second claimed to suffer from attacks similar to hay fever during the entire year. Both cases will be more fully explained later. The third had to be excluded on account of an inflammation of the conjunctiva.

The pulverized pollen grains of corn, in a centrifugalized watery solution, containing many so-called starch bodies, was dropped into the conjunctival sac of each eye of the eight hay fever patients and eleven control patients. Dr. A. Thost, who is greatly interested in therapy of hay fever and who is well known, and read an excellent article before the Naturalist Society of Hamburg, kindly undertook the confirmation of the conditions found after the application of the poison.

These will be described in another place more fully. As the space is insufficient here, the observations will be summarized in brief.

Not one of the eleven control patients showed the least specific irritability toward the pollen toxin. Several felt a mild burning after the instillation of the drops. They however, felt the same subjective sensation, when the experiment was made with physiologic salt solution instead of the toxin. In not one did the slightest objective change appear. Even when the poison was applied in 20-fold strength and quantity, there was no irritative symptoms present in the control persons.

Quite the contrary was shown by the experiments on the hay fever patients. All of them reacted to application of the toxin, as well subjectively as with characteristic objective symptoms.

In the first place, each one felt the characteristic burning in the inner canthus, so well known to hay fever patients, and, later on, itching, feeling of warmth, and photophobia. One suffered with an attack of migraine, to which he is subject in the hay fever period; another, 48 hours after the infection, had a feeling of weariness in the infected eye.

Objectively they showed, a short time after the use of the toxin, a severe reddening of the caruncle, then of the margin

of the lids with injection of the conjunctival vessels, accompanied in some patients by an evident chemosis.

The intensity of both subjective as well as objective irritation varied considerable; in some they were very severe, even after very mild doses of the toxin, while in others they were mild or even very slight. But in no case did a clearly demonstrable reaction fail to accompany the subjective sensation.

I believe, judging from my experiences, that a considerable emphasis should be laid on the objective changes. For that reason, the investigations on the eye will be described here since they are more evident and more clearly demonstrable than the changes which the pollen toxin causes in the nasal cavities of hay fever patients. Furthermore, irritation appeared in several of the patients after a short time in the nasal cavity corresponding to the infected eye. In other patients, the toxin was also put in the nose with the invariable result that there at once appeared a severe swelling of the mucous membrane, and usually so rapidly that there was not time for paroxisms of sneezing. In one case, where only a small amount of toxin was used in the nose, there was a severe attack of sneezing.

Considering the complete coincidence of the results obtained, which were derived from 9 hay fever patients, and more than 20 control patients, it can be stated with much certainty THAT POLLEN TOXIN GIVES RISE TO CORRESPONDING SPECIFIC IRRIRATIVE SYMPTOMS IN HAY FEVER PATIENTS, BUT IS COMPLETELY INERT IN CASES OF NORMAL PERSONS.

I cannot here dwell further on the possibility thus opened up, of obtaining an insight into the important question of individual predisposition. I can only refer to the practically weighty fact that this specific reaction of the hay fever patient to the pollen toxin will give us the power of sharp differentiation of hay fever from other similar diseases.

After it has shown that the contents of the pollen grains of the grains of the graminous plants were actually the substance which causes attacks of hay fever in such patients, on the 24th of January, as a complement to the experiments described above, experiments were made with an antitoxin obtained by the author by injection of the contents of such grains in animals.

The injected animals had furnished for months a blood serum which not only did not neutralize the pollen toxin, but considerably increased its action on hay fever patients. These properties gradually receded into the background, and an antitoxic influence was unconsciously imparted. Even in my previously cited publication, I could report similar findings. On January 24th, all 8 patients, after the infection of their eyes by the pollen toxin had produced the symptoms described, had applied to the other eye the same amount of toxin, which, however, had previously been mixed in a glass with the antitoxic serum. The result was that 7 of the hay fever patients did not experience even the slightest reaction, either subjectively or objectively, to this injection The 8 patients, who had shown a very great susceptibility to the toxin, experienced a very slight, and very transient itching in the eye treated with the mixture. In this eye, a slight reddening was also to be seen. This disappeared completely in a half hour, while the one, where the toxin without admixture of the antitoxin had been applied, was reddened even after the lapse of 24 hours, and after 48 hours still felt tired.

FROM THIS IT IS SEEN THAT IT WAS POSSIBLE COMPLETELY OR NEARLY COMPLETELY TO NEUTRALIZE THE POLLEN TOXIN BY MIXING WITH THE ANTITOXIN IN THE TEST TUBE.

Considering that in these experiments larger amounts of the toxins were used than those which infect one normally during the hay fever period, we may claim on the score of these last experiments that it will be possible to give soon the numerous hay fever patients the long-hoped for amelioration of their period of suffering.

There is no doubt that it will be possible to manufacture a much more powerful antitoxin than the author had at his disposal. But even with this, the author could bring about cures in the eye and the nose, as the following thoroughly satisfactory results show:

A drop of a very powerful pollen toxin was instilled into an eye. As soon as the caruncle was very red, and the patient experienced a decided burning, a drop of antitoxin was brought into the eye by means of a dropper. The burning

ceased immediately, but was felt again a few moments later A second drop of the antitoxin was used with the same result viz: that the burning ceased immediately, but soon returned. After four drops had been applied within 20 minutes, the subjective symptoms completely disappeared, as did the above mentioned objective changes in the caruncle. There never was an injection of the conjunctival vessels. The application of the antitoxin could be made without any help, and could be done at any time and all circumstances. In applications to the nose, the course was similar, only the beneficial effects were still more striking, because larger amounts of the antitoxin could be absorbed in the nasal cavities than in the eye.

Thus, there seems to be a well grounded hope of attacking the hay fever by simple external application of the antitoxin, provided this is applied early. As soon, however, as large quantities of the poison are absorbed, the effect will hardly be obtained otherwise than through subcutaneous injection.

The question as to whether it will be possible to prepare a serum, one injection of which would be sufficient to immunize hay fever patients for a long time against this disease, cannot be answered just yet, nor can even the possibility of an active immunity against hay fever be discussed any further now.

In all the above experiments, the toxic symptoms were caused by pollen toxin obtained from the pollen of Indian corn. The antitoxin was also obtained from this plant. The author has remarked, above, that the pollen grains of all the grasses examined by him (18 kinds, in all) act the same way on patients. The question of whether the pollen toxin of the different grasses are identical is very important. A practical, specific agent against hay fever could be found only in such a case. By the proper experiments, the author can prove that the toxin obtained from the pollen of rye is completely neutralized in the test tube by antitoxin obtained from the pollen of corn; and, furthermore, the subjective irritative symptoms caused in a patient by the toxin of the pollen of rye are completely cured by the antitoxin obtained from corn. It thus seems very probable that the pollen toxin of the different grasses are identical.

Additional experiments have been commenced to decide this very important, practical question.

I am deeply indebted to Dr. W. Weichardt for his zealous assistance in carrying out the above experiments.

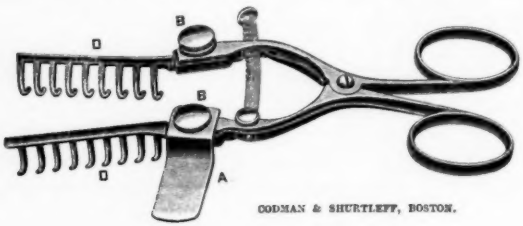
XXXIV.

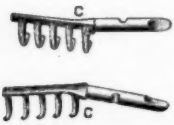
A MASTOID AND AURICLE RETRACTOR.*

By Frederick L. Jack, M. D., Boston.

The mastoid part of this instrument is a modification of Allport's retractor and Jansen's mouthgag. The additional simple device to hold the auricle is thought to be new. The following cut illustrates the many advantages of the instrument:

There are three sets of blades, varying in length to fit different lengths of incision. Two sets only are recommended. The teeth are placed close together and, with the blades in





position, the edges of the wound are widely separated so as not only to afford sufficient room for operating, but to control hemorrhage. The handles are pressed together, like those of scissors, and held in place by a ratchet. The instrument is quickly adjusted and absolutely self retaining.

The auricle, which is often in the field of operation, requiring an assistant to hold it well forward out of the operative field, is now perfectly held aside by means of the ear-tip (A). The tip is simply a thin piece of metal adjusted to a groove in the head of screws (B). Both heads are grooved so that it can be readily used for the right or left ear. After the retractor is in place, the upper half of the auricle is folded over and held in place by adjusting the tip in the groove.

The instrument has been carefully made by Codman & Shurtleff, Boston.

*Read before the American Otological Society, Washington, D. C., May 13, 1903.

ABSTRACTS FROM CURRENT OTOLOGIC, RHINOLOGIC AND LARYNGOLOGIC LITERATURE.

I.— EAR.

Ossiculectomy for Chronic Suppurative Otitis Media.

MAX TOEPLITZ. (*Archives of Otology*, Vol. XXXII, No. 1, 1903.) CASE I: A boy who had been operated on a year ago at the Montefiore Home, who had had a running from the right ear with considerable odor for several years. There was perforation and the use of the probe in the attic showed considerable grating. There was some hesitation as to whether the operation should be the radical operation or ossiculectomy, but the latter was finally deemed more advisable and was performed. The ossicles on removal were found carious. After operation the otorrhea and odor ceased and the boy appeared well. He passed from observation and has since not been seen until quite recently. At present there are some odor and a few granulations on the posterior wall of the meatus. It was considered probable that a radical operation would have to be done in this case.

The second case was in a child, aged eight years, operated on four weeks ago at the Post-Graduate Hospital; giving the history of continuous discharge for six years, much odor, and examination with the probe revealed grating in the attic. The ossicles were removed, the incus was normal, and the malleus was carious. Discharge and odor ceased, the ear is now perfectly dry, and the general health of the patient improved.

The question seemed to be as to when the ossicles should be removed and when not. Dr. Toeplitz thought that if diagnosis could confine the disease to the middle ear an ossiculectomy would be sufficient, but inasmuch as other parts were often involved, and as this was only to be ascertained by free exposure, the question still remained. He considered it wiser to make an ossiculectomy as a preliminary, followed

later by the radical operation if the discharge did not cease, and gave as his experience in twenty cases only one in which the second operation was required.

Another important point he brought up was as to what promises could be made with regard to hearing after operation. He cited a case seen in consultation in which other physicians had promised improvement; he was not so hopeful, and as the case turned out the hearing was worse after than before operation. He was in favor of a guarded prognosis.

Absolute Occlusion of the External Auditory Canal from an Exostosis and Ecchondrosis from the Anterior Wall of the Canal.

MEIERHOF. (*Archives of Otology*, Vol. XXXII, No. 1, 1903.) According to tests the ear seems normal, sound conduction is good, and some hearing is present. He has hesitated about rendering the canal patent by operating, but the patient now complains of neuralgia radiating from that side of the head. He has not been able to determine whether or not operation is advisable, owing to the unknown depth of the exostosis and possibility of completing the operation so as to have a successful result.

Sinus Thrombosis, Followed by Hypoglossal Paralysis.

CARL KOLLER. (*Archives of Otology*, Vol. XXXII, No. 1, 1903.) A girl, G. S., twenty-one years old, was admitted to the Mt. Sinai Hospital June 30, 1902. For two weeks she had, after some tonsillitis, been suffering with pain in the left ear, general headache, and high fever with chilly sensations. Four days later paracentesis of the left drum was made in the dispensary; no pus. On admission some tenderness was found over the mastoid tip and antrum and over the posterior part of the mastoid. Pronounced tenderness along the upper course of the jugular. Wry-neck of moderate degree. The drum was not thickened but of a pale greenish color, as if a green exudate adhered to it on the inner side. No discharge. The fundus in both eyes showed marked venous congestion. On the next day this has pro-

gressed so much as to leave no doubt about papillitis developing.

Operation July 1st.—Preliminary paracentesis; considerable discharge. After the first removal of bone a minute quantity of pus was found. Sinus was accordingly opened, its wall being exceedingly thin. It was situated very superficially and well forward, overlapping the antrum. It bled freely. It was exposed for about one inch; it was blue in color, narrow and bulged considerably. Some granulations were found in the antrum and the posterior cells; those of the tip were free of pus or granulations. Iodoform gauze dressing. The subsequent course was that, after a short intermission, the temperature continued septic in character. Patient complained of severe headache in the left side and occiput, and extreme tenderness in the upper course of the jugular. Papillitis increased visibly so as to deserve the name of choked disc. Blood culture sterile.

Operation on July 11th.—(1) Curettage of sigmoid sinus; (2) ligature and excision of the jugular. The dura mater of the median fossa was exposed over the tegmen tympani and antri; it did not bulge and appear normal. Then the sinus was exposed in its entire length, going as near as possible toward the bulb. It was thrombosed. Upon curetting it bled freely from above, but the bleeding from the region of the bulb was not satisfactory. Then the jugular was tied and dissected as high up as possible; about 1 1/2 inches of it were excised. It was not thrombosed. A culture of the thrombus found in the sinus was sterile. Temperature in the next days ranged somewhat over 102°. Some tenderness over the wound in the neck and in the upper part of the posterior cervical triangle. On July 14th the patient complained of severe pain in the head and pain on swallowing. The general condition was not so good, the patient being weaker and paler. On July 16th, gauze packing was removed from the sinus, and from its lower end some pus escaped with distinct pulsation. A rubber tissue drain was introduced toward the bulb and kept in that position. From now on till July 27th the temperature was almost normal, there was no pain, and the general condition was very good. On July 27th the temperature rose again, and from now on kept intermittent; patient

began again to complain of severe headache. No pus came from the sinus from the direction of the bulb. A tender diffuse swelling appeared in the upper third of the posterior cervical triangle. A communication existed between this swelling and the jugular bulb, for on pressing upon the swelling pus escaped from the lower part of the sinus. On August 4th, the deep abscess situated between the deeper muscles of the neck and near the base of the occiput was opened and drained. With the probe one could feel a spot of the occipital bone near the condyles denuded. However, fever and pain continued. The presence of another abscess near the bulb of the jugular was decided on, and on August 14th this second abscess was searched for and found at very great depth. It was reached from behind after having tried in vain to reach the bulb of the jugular through the old wound in the neck. On August 16th, two days after the last operation, it was noticed that the tongue, when protruded, deviated to the left. On the next day the complete symptoms of hypoglossal paralysis were present on the left side. Besides, patient complained of difficulty in swallowing. When the sense of taste was examined it was found diminished in the posterior third of the left side. Temperature remained high. The discharge of pus was very profuse for a few days, then it stopped almost suddenly about one week after the last operation. Temperature became and remained normal and the patient made a quick recovery, The papillitis cleared up gradually; however, it took many weeks to disappear. The hypoglossal paralysis improved more slowly, and traces of both can be recognized to this day.

In discussing the case, which in many particulars differs from the typical picture of thrombophlebitis of the sigmoid sinus, Dr. Koller wished to say from the beginning that it most likely was a case of primary phlebitis of the jugular bulb. This class of cases has been lately brought into prominence by Jansen and others. The mechanism of infection is not quite apparent yet, but the shortest route would suggest itself as the most likely and that would be directly from the tympanic cavity to the bulb of the jugular, which lies in so close proximity. Perhaps congenital peculiarities would predispose an individual to this danger. The patient

exhibited rapidly developing papillitis which does not belong to the typical symptoms of thrombosis of the sigmoid sinus, although it is regularly met with in the thrombosis of the cavernous sinus. But, according to Jansen's statements, papillitis is a common occurrence in the cases of primary phlebitis of the jugular bulb. The conditions revealed by the first operation agree fully with that view taken of the case. The abscess in the bulb must have perforated and burrowed under the deep muscles of the neck until it appeared in the upper part of the posterior cervical triangle. Macewen gives another explanation of these deep abscesses. He states that they owe their origin to phlebitis of the condyloid emissary veins. However this may be, recovery did not take place until a second abscess, which was deeper yet and which was evidently the original periphlebitic abscess, had been opened and drained. There are a number of unusual symptoms connected with the case. Wry-neck is sometimes found in cases of thrombosis of the jugular, and the explanation given by Koerner and others is that, the movements of the head toward the other side being painful, the head is instinctively held as in wry-neck to ward off pain. It is hard to understand why this symptom should occur only in a comparatively small number of these cases. At different times in the history of this case presented there was noted difficulty in swallowing. A few days after the last operation the disturbed sensation of taste and motility of the tongue made their appearance, proving paralysis of the glosso-pharyngeal and hypoglossal nerves on the the left side. It is not impossible that this may have been due to injury, although Dr. Koller felt pretty sure this was not the case. Considering that the function of all three nerves, the ninth, tenth, and eleventh, leaving the skull through the jugular foramen in close proximity to the jugular bulb, was disturbed, and that the twelfth, leaving through the condyloid foramen, was paralyzed, it may not be too far-fetched to assume that the periphlebitic abscess was responsible for it, just in the same way as we sometimes see facial paralysis in cases of mastoiditis.

Sinus Thrombosis.

BRANDEGEE. (*Arch. Otol.*, Vol. XXXII, No. 1.) A patient

fifty-five years of age, five weeks ago came to the infirmary with ear trouble of ten days' standing. Temperature was 102°. At operation an abscess was found in the antrum and the sinus was unusually prominent. On exposure it appeared very black and was excised. A parietal clot was evacuated and bleeding restored from both sides. The temperature remained up on the second day. On the third day it came down only to go up again without any chill. It was then decided to operate in the neck and the jugular vein was exposed. It seemed normal except the portion from the facial junction upward where it contained a clot. The entire vein was resected and staphylococci were found in the walls. The patient made an uninterrupted recovery; the temperature after the second operation did not go up.

Chronic Suppurative Otitis Augmented by a Blow Followed by Symptoms of Mastoid Infection and Jugular Thrombosis.

LEDERMAN. (*Arch. Otol.*, Vol. XXXII, No. 1.) The usual operation was done, the mastoid opened, and carious tissue and pus removed; sinus thrombosed; the jugular was then tied one inch above the clavicle and a portion was resected. The tributaries were not ligated. The sinus was then opened and scraped. The parts were then curetted and the patient was in good condition. All went well for about five days, when chill and high temperature developed, and pus was found in the lower portion of the sinus wound. The wound was opened, but no pus was found, and it was concluded that the parts drained through the antrum. In five more days the temperature again rose; then it was found that the posterior sinus wound was infected. An inch and a half of bone was chiselled away, and the wound curetted till good return of blood was obtained. The patient did well and was shown as cured. For five months he was all right, when the ear began to discharge and a little granulation tissue and a portion of the incus were found to be present in the middle ear. These were removed under cocain. Three months ago the patient returned with a little fistula in the scar over the mastoid which led into the antrum. Probing disclosed bare bone. The Schwartze-Stacke operation was done, and the

result up to the present time is good. However, there was marked facial paralysis, which has slowly improved. The case is somewhat remarkable for the number of serious operations undergone. Dr. Lederman also thought the case illustrated the necessity of exercising great care in the thorough removal of all diseased tissue. He asked the opinion of the members of the Section as to the chance of complete recovery from the facial paralysis. The whole cavity has healed over, though the last operation was performed two months ago, and no sign of suppuration is present, though moisture occasionally comes through the Eustachian tube.

Thrombosis of the Jugular Bulb and Very Severe Pyemia.

ARNOLD KNAPP. (*Arch. Otol.*, Vol. XXXII, No. 1.) The patient was a man, twenty years of age, who had been under treatment for a mastoid fistula and external otitis when he suddenly became very ill with headache, vomiting, and great prostration. Temperature was 105.6°; pulse 130. On the following day the antrum was exposed containing granulations and pus. The tympanum was also laid bare and contained granulations. On removing the tegmen antri healthy dura was revealed. As the bone directly posterior to the antrum was honeycombed with pus, the operation was extended in this direction and some free pus was found on the surface of the sigmoid sulcus. The sinus in this region was covered with apparently healthy granulations; lower down it was normal and soft. Puncture in two places gave fluid blood. Two days later, as the pyemic temperature remained, the jugular vein was ligated. The ligation was somewhat difficult on account of the presence of enlarged cervical glands. The vein itself was found perfectly normal. The sinus was also exposed as lown as possible and on being incised contained fluid blood. Notwithstanding these two operations the patient proceeded to go through a pyemia of nine weeks' duration. The greatest variation in temperature was 13°, going from 108.8° in one evening to 95° the next morning. Metastatic abscesses were formed in the subcutaneous tissues of the forearms and legs, and in the deep cellular tissue beneath recti insertion just above the symphysis, the

latter focus in turn involving the perineum, the testicle, and adjoining areas of the thigh. On the whole, the patient was anesthetized seven times. There were very few chills. There was no apparent lung involvement and no diarrhea. Optic neuritis was present. The sensorium throughout this entire period was free and the nourishment was always well taken. Owing to the poor condition of the patient the ear wound was allowed to take care of itself; in other words, no attempt was made to tampon the tympanum and consequently the entire area filled with granulations and is covered with epithelium.

Specimen of an Unusually Distended Sigmoid Sinus and Jugular Bulb Obtained From a Patient who had Died of Meningitis.

ARNOLD KNAPP. (*Arch. of Otol.*, Vol. XXXII, No. 1.) The case has been described in extenso in the Archives of Otology, Vol. XXX, No. 5. The peculiarity of the sinus was that it presented an unusually distended condition and that the anterior wall was normal while the posterior was infiltrated and very much thickened, and on its surface contained necrotic tissue. There was no thrombus found at autopsy.

A Hammer and Incus found Lying Loose in the Attic.

DENCH. (*Arch. of Otol.*, Vol. XXXII, No. 1.) Specimen came from a patient on whom be had performed the radical mastoid operation some ten days ago. The hammer and incus were tightly bound together and enveloped in a mass of granulation tissue. He thought this was interesting from several standpoints: first, that it was unusual to find the two ossicles bound together; second, that it shows the disease was limited to the attic. He said the case was one of recurrent mastoiditis apparently, and he found that the mastoid was very little involved and that there was a good deal of softening near the tympanic vault. The ordinary radical operation was completed, a Panse flap made, and the posterior wound left open. Dr. Dench said that very many of these cases of recurrent mastoiditis are really exacerbations of a chronic otitis, and that we should, in these cases, be prepared to do a radical operation inasmuch as the mastoid

operation, though relieving the symptoms of the patient, would not be followed by cure.

Malignant Disease in the Neighborhood of the Right Eustachian Tube.

WAGGETT. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) The patient was a man of strong physique, complaining of pain and tinnitus in the right ear, of two months' duration. Nose and throat symptoms completely absent. The drum membrane of the right ear was remarkably retracted and its vessels injected. The right Eustachian eminence was involved in a firm, infiltrating new growth, which extended behind the posterior wall of the naso-pharynx on the right side. The whole mass was not much larger than the yolk of an egg. The history, evidence and result of antispecific treatment negatived the probability of syphilis.

The Contagiousness of Acute Otitis Media.

WOLFF, Frankfort on the Main. (*Archives of Otology*, Vol. XXXII, No. 2.) The author takes issue with Lermoyez who claims that acute otitis media can be transmitted from one to another. Cases cited all appear to be due to an influenza infection, and in times of epidemic one not infrequently sees otitis begin without any other symptom of an infectious attack, although it is nothing more than a secondary infection.

Campbell.

Entotic Murmur due to Aneurism of the Occipital Artery.

MUCK, Rostock. (*Archives of Otology*, Vol. XXXII, No. 2.) The patient, aged 68, had for three months been conscious of a continuous pulsatile beating in her ear, which has become so intense as to disturb sleep. On examination a lobular pulsating tumor, streaked under the skin and extending from the mastoid process to within 2 cm. of the occipital protuberance. Pressure at the anterior lower corner corresponding to the place where the occipital artery becomes superficial, prevents pulsation in the entire tumor. Hearing normal on both sides. The sac was dissected out, and although the subjective aural symptoms completely disappeared

yet pulsation could still be felt over an area 2 cm. in diameter. *Campbell.*

The Masto-Squamosal Suture.

ADERMAN, Orebro, Sweden. (*Archives of Otology*, Vol. XXXII, No. 2.) The author has examined skulls of various races and has not been able to find any particular difference as to the frequency of the suture, with the exception of the negro. In 79 negro skulls examined, 76 were completely without sutures.

In all, 5138 mastoid processes were examined, and 1806 had sutures. Of these 64 were well developed, 845 were easily recognizable and 951 presented traces. *Campbell.*

Acute Mastoiditis Complicated by Scleroderma.

KAMM, Breslau, (*Archives of Otology*, Vol. XXXII, No. 2.) In a case of acute middle ear suppuration pain set in behind the ear. The Mt. was perforated in the upper anterior quadrant and was red, thickened and bulging. The skin below the painful mastoid was thickened and hard. Examination showed the skin of the neck of the other side, and in fact, that of the whole body except abdomen and buttocks had the same board-like consistence. It was a case of diffuse scleroderma.

The Mt. wound was enlarged downward and backward, but the mastoid trouble persisting the bone was opened and freed of necrosed bone and granulation tissue. Incision through the skin gave rise to a marked venous hemorrhage. *Campbell.*

Therapy of Otitis Media Suppurativa Chronica.

LEE WALLACE DEAN, Iowa City, Iowa. (*Amer. Medicine*, Jan. 17, 1903.) The various medicinal and cleansing measures in common use for the relief of this condition are considered somewhat in detail. The question of ossiculectomy is considered, and statistics given. The author himself regards the radical operation as the most satisfactory treatment for chronic suppuration, and considers the danger of the operation as very small. Healing results in one to four weeks. The mortality from the operation varies greatly,

being mostly from extraneous causes, few if any deaths being ascribable to the intervention. This is the only procedure by which a large amount of dead bone can be removed from the middle ear; and more deaths have occurred from not operating than as the result of unnecessary operations.

He does not consider it wise to treat the majority of the patients for more than two months before operating. Necrotic areas in the middle ear, shown by roughness of the bone under the probe, and the inability to pass the probe into the mastoid antrum, indicate the advisability of the radical operation. If there is only roughness of the long process of the hammer, its extraction may be sufficient. Polypoid growths should be removed and their bases cauterized. Many cases in which there is simply a collection of dead cells and pus in the middle ear will heal in one or two weeks under simple cleansing measures. If there is hypertrophy of the mucous membrane the discharge will usually reappear whenever the patient is exposed to cold.

Richards.

A Case of Mastoiditis with Features of Osteomyelitis.

H. KNAPP, NEW YORK: Patient, a frail, anemic woman, aet. 34, in the 8th month of pregnancy. Symptoms: pain in mastoid region three weeks, then headache, nausea, insomnia. Neither earache nor otorrhea. Hearing the same as in the other, well ear. Tympanic membranes normal; Shrapnell red and somewhat bulging. Mastoid process enlarged, dull red, hard; tender or doughy at the posterior border and red in the adjacent part of the occipital. Fever at times and also some chills. The enlargement of the mastoid, with almost normal tympanum suggest mastoid osteomyelitis. The mastoid is opened from tip to base. Pus in antrum, diploic structure of its interior. Disseminated small abscesses scattered through the whole apophysis, connecting with one another by slender passageways through the hardening bones. The mastoid was cleaned out as well, except the lower border of the adjacent medial wall. In six weeks swelling behind the mastoid. Second operation: Removal of the bony remnants of the mastoid tip. Splitting of the muscles in the suboccipital area. Arterial hemorhage (oc-

cipital artery) stopped by compression. Turbid liquid and a good deal of pus evacuated. Large piece of carious occipital bone removed. Dura of cerebellum exposed extensively; healthy. Tamponing. Suppuration protracted six weeks. Stopped after removal of another piece of carious bone of occipital. Recovery with depressed scar. Ear healthy; in hearing as good as before and as good as the other ear.

Author's Abstract.

Abscess of Left Temporo-Sphenoidal Lobe. Operation. Recovery.

E. GRUENING. The patient, a boy thirteen years old, presented himself at the Mt. Sinai Hospital, on April 15, 1903, with a temperature of 102°. He had been sick for four weeks; had had a discharge from both ears for six years. The right ear was quiescent, the left was discharging fetid pus and cholesteatomatous masses. The mastoid region was red, edematous and tender to pressure. Shortly after admission he had a severe headache on the left side, with a chill and temperature 102°. A radical mastoid operation was performed, extensive caries was found, the upper-posterior bony wall of the external auditory canal had been destroyed by necrosis. The malleus and incus were absent, and the antrum, much larger than usual, was found filled with cholesteomatous masses. The tegmen of the antrum was carious and the dura mater was covered with granulations. The wound was dressed in the usual manner, and the patient did well. Eight days after the operation the patient vomited and had severe headache on the affectcd side. His temperature remained normal, but the pulse ranged from 48 to 54. Examination of eyes: The papillae were swollen, presenting the appearance of a neuro-retinitis. he next day (April 25) the symptoms were more pronounced, but there were no localizing symptoms and no sensory aphasia.

The wound was reopened, and under antiseptic precautions the dura was exposed over the roof of the antrum, beneath the temporal ridge and part of the squama. No fistula was found in the dura, but there was a marked discoloration over the antrum. The dura was punctured with an as-

pirating needle through the discolored spot. After the needle had perforated one inch, a syringeful of fetid pus was withdrawn. Crucial incision was made through the dura, which permitted evacuation of about two ounces of pus. The finger was introduced and a large abscess cavity found. The wound in the brain was enlarged with forceps and packed with strips of gauze. This gauze was about one-half inch broad and had a selvage on both edges to prevent raveling. Immediately following the evacuation of pus, the pulse rate rose to 100. The day following the operation the patient developed sensory aphasia, but felt better. The wound was dressed and pus and a considerable quantity of serum followed the removal of the dressing. On the two succeeding days, pus and serum exuded on removal of dressing. Since that time patient had made an uninterrupted recovery. The mastoid wound is nearly healed. The patient has no other symptoms than the optic neuritis, which still persists. *Author's Abstract.*

Cerebellar Abscess.

E. GRUENING. The patient (B. S.), schoolgirl, age 10.

Admitted to Mt. Sinai Hospital, with history of severe headache, chills, fever. Vomiting, a purulent discharge from left ear for past five days. A slight discharge from the right ear.

Surgical Examination—Left Ear: Drum swollen, red. Small perforation. Mastoid red, tender, swollen.

Right Ear: Drum red, swollen, no perforation. Mastoid, somewhat tender.

The patient is drowsy when left alone.

Examination of Eye,	negative.		
Temperature,	102.8 deg.	—	104.8 deg.
Pulse,	108	—	110

Operation: Radical mastoid on left side. Mastoid cells found carious. Antrum readily exposed; contained mucopus and granulation. Sinus exposed for one-half inch (no pulsation). Thorough removal of diseased parts, and through irrigation, dry iodoform dressing.

Patient did well. Discharge from non operated right ear

ceased. Mastoid wound healthy; granulating. Temperature was reduced to 99.4°, and pulse to 88.

Two weeks after operation, patient complained of frontal headache—vomited. No rise of temperature. Mastoid wound looking well.

Right ear: Negative. Eyes: Negative.

The vomiting persisting, patient again drowsy, a secondary operation was done, consisting of:

Thorough cleaning out of middle ear. Exposure of dura; multiple exploratory puncture of brain with aspiration. Exploratory puncture in all directions and inward for 2 to 3 inches. Negative. Sinus covered by healthy granulations. Patient again improved.

Five days later, however, patient again vomited. Now pulse retarded to between 60 and 80 and 68. Right pupil larger than the left. No aphasia, no localized symptoms.

The patient continued drowsy, with headache, vomiting. Pulse at 60.

A further exploration of operation field was done. Tip of temporal lobe, sinus knee and the cerebellum were exposed.

Dura normal. No bulging.

Sinus normal.

Repeated puncture in all directions (including posteriorly toward occipital lobe), negative. Aspirations of cerebellum, negative.

May 3. (Three days later) Left facial paralysis developed. (Deviation of tongue, drooping of left angle of mouth).

May 5. Involuntary urination. Kernig sign present. Continues drowsy. Mentality good when aroused. A general tonic convulsion (of three minute duration) with dilated pupils. Breathing slow, sterterous, pulse imperceptible, vomiting immediately after.

May 6. Optic neuritis. Not easily aroused, facial paralysis persists. Kernig sign persists. Respirations drop to 8, and pulse very weak.

May 7. Another convulsion, after which respiration drops to 3. Pulse only fair. Artificial respiration. Put on operating table for final attempt to locate the abscess. Multiple exploratory puncture of left cerebellum and cerebrum. Negative.

Exitus at 5:35 p. m.

Report of Post Mortem:—

In right cerebellar hemisphere, near upper surface of lobus clivi and extending posteriorly almost to the sulcus clivalis was found an abscess cavity the size of a walnut, filled with greyish red pus (no odor), surrounded by a distinct pyogenic membrane of the same color (very fibrinous). The surrounding brain tissue was negative.

Culture from Abscess: Streptococci,

Author's Abstract.

A Valuable Apparatus for Use in Insufflation of Air in Diseases of the Ear.

LUCAE, A., (*Deutsche Med. Woch.*, 1903, No. 11), has made the carbon dioxide gas apparatus, which is much employed in charging beer, applicable in catheterization. The carbon dioxide gas seems to exert a somewhat stronger irritation on the mucous membrane than air does. Otherwise the action is no different. Its use caused dizziness in only one case. The author has not used it in Politzeration on account of the severe irritation caused by it in the throat. The abstractor cannot find any particular value in the method which would overcome the discomfort of its use. *Levy.*

Hemorrhage Following Erosion of the Cranial Blood Vessels, in Suppurations of the Temporal Bone.

EULENSTEIN. (*Zeitsch. f. Ohrenheilk.*, Bd. 43.) If a suppurative process attacks the sinus, usually no hemorrhage follows, because a thrombus is formed in the lumen of the vein before it breaks through. Only in the rare cases where the infection progresses very rapidly and the thrombosing is slower, there is hemorrhage, usually during the operation, because then a sudden lowering of the pressure on the walls takes place. The blood then flows outward, through the wound, meatus, or tube, or inward between brain and cranial capsule. The author reports a case observed by him. It was a 5-year-old boy, five days after an attack of scarlatina had an ear ache, and seven days later had to be operated. The sinus was found permeable, covered with pus at one small place. Eleven days later a spontaneous, profuse hem-

orrhage took place which had to be checked by pressure bandages. As a high fever now set in, the bandage had to be changed, but this had to be given up on account of the tremendous hemorrhage. This was repeated several days later. Pyemic symptoms appeared. The jugular was then ligated, and the sinus laid bare in its horizontal portion. While compression was made here with the finger, it was possible to change the sinus tampon, with very little bleeding, and to cleanse the wound. The new trepanation opening was closed primarily. When the bandage was changed the next time, 19 days after the first operation, a terrible hemorrhage took place. Nevertheless the case ended in complete cure. The author recommends, in such cases, the methods used by him. Of the 18 cases reported in the literature of spontaneous hemorrhage from the sinus, only three had a favorable termination. *Levy.*

A Special Method of Treatment of Suppuration of the Middle Ear, and the Principal Drugs Used.

EHRENFIND (*Deutsche Med. Wochen.*, 1902) recommends very highly a method used by him for years in the treatment of suppurations of the middle ear, especially in chronic otitis, and also in the severe, acute cases. It is as follows: After thoroughly cleaning the ear, the patient takes a horizontal position, with the suppurating ear upward. A weak solution of lysol is dropped into the ear, and left for ten minutes. In this way it makes its way into the neighboring cavities of the ear. The fluid, with the dissolved pus, is now sucked out with a rubber syringe. This is repeated 10-20 times. According to indications, the whole process should be repeated two to three times at one visit. In this way it is possible to remove pus and cholesteatomatous masses and even granulations from the adjoining cavities. This method must be carried out every day for months or even years. The results obtained by the author establish as indication, for operation only an immediate danger to life, such as a severe pyemia and meningitis, and secondly, stenoses of the external canal. Caries of the ossicles always heal, often with good functions. In place of lysol (1-30) can be used alcohol, formalin, and especially Muck's peroxide of hydrogen. The method was

severely attacked from many sides, when it was reported at the Berlin Otologic Society. Independent of the fact that few patients have the time or desire to spend for months and years several hours a day with the doctor, it seems a priori in possible that one could reach in this way the focus, which is sometimes entirely walled off. The indications which the author propounds can turn out very unpleasantly for those physicians who subscribe to them. Whoever waits for the first symptoms of pyemia or meningitis will usually be too late with his operation. *Levy.*

A Case of Sinus Thrombosis and Otogenous Pyemia Healed by Operation.

Koch, (*Ugeskrift for Lager*, No. 49, 1902.) The patient was a girl of twelve years, who suffered with a chronic discharge from the middle ear of the right side, following an attack of scarlatina at the age of three years. Without any demonstrable cause, then suddenly supervened pain in the ear, nausea, vomiting and dizziness. Two days later the temperature rose to 40 C., with chills and for three weeks intermittent fever.

When the mastoid process was opened there was found a cavity filled with stinking pus. The dura was laid bare at one place in the posterior cranial fossa. As this was chiseled away and enlarged, a lot of foul-smlleing pus flowed out of a perisinic abscess cavity of the size of a hazel nut. The wall of the transverse sinus was ulcerated through and the sinus was filled with degenerated, purulent thrombi masses, Three days later it was attempted, but vain'y, to reach the foramen jugulare; one week later, a perivascular abscess on the neck was opened. Finally, an infarct of the left lung appeared, coupled with an abscess of the lung and empyema. Patient was discharged from the hospital at the end of three and a half months. The author closes with a discussion of the symptomatology of sinus thrombosis and the conditions necessary for the development of otogenic pyemia. The diagnosis of sinus thrombosis is often made only after an explorative operation, and even then is difficult to decide before an incision has been made into the wall of the sinus.

J. F. Fischer.

The Etiology and Prophylaxis of Necrosis of the Bone in the Course of a Chronic Otitis Media Suppurativa.

SCHEIBE. (*Zeitsch f. Ohrench.*, Bd. 43.) In earlier investigations, the author came to the conclusion that the existence of necrosis in acute suppuration of the middle ear was almost entirely dependent on constitutional diseases, such as tuberculosis, lues, diabetes, influenza and scarlatina. He has recently examined the bodies of thirty-four cases of chronic ear suppuration for the presence of necrosis. In twenty-five cases the aural suppuration was the cause of death of which sixteen were complicated by necrosis. There was an additional case of necrosis. Of these seventeen cases, sixteen showed cholesteatomata; the cause of the necrosis was retention of pus, and in contrast to the acute cases, constitutional diseases had no part. In his private practice, he observed seven cases, in vivo, of necrosis complicating chronic suppuration. In all cases were cholesteatomata present, usually complicated by granulations. Here also, retention of fetid pus was the cause of the necrosis. *Levy.*

The Mastoiditis of Diabetics.

EULENSTEIN, (*Zeitsch. f. Ohrenheilk.*, Bd. 42.) The author has analyzed a number of his own observation, and those in the literature, 70 in all, on mastoiditis in diabetics, and concludes, contrary to the prevailing belief, that the course of the mastoiditis is not materially affected by diabetes, but depends chiefly on the richness of the mastoid in cells. *Levy.*

General Sepsis in Suppuration of the Middle Ear, With a Central Perforation of the Drum.

(*Zeitsch. f. Ohrenhilk.*, Bd. 42.) In the course of the last 10 years, Bezold has seen 10 cases which, in his opinion, have something typical about them, and therefore, ought to be classed together in a special group. In each o those there was the picture of an acute sepsis but without the clinical or anatomic findings giving a sufficient explanation.

In the first case, which was an acute exacerbation of an old suppuration, death occurred 14 days after the onset, accompanied by severe general symptoms. The autopsy showed

minimal changes in the middle ear and antrum a thrombus in the bulbus jugularis, attached to the wall, and embolic foci in the lungs.

In the second case, death occurred 10 days after the onset of an acute otitis media. In this case the mucous membrane of middle ear and antrum was greatly swollen and dark red. Between the dura and the posterior surface of the temporal bone was some pus. The external wall of the sinus showed the signs of a mild phlebitis without the thrombosis. The sepsis apparently had its origin here.

In the third case, there had existed from childhood an occasional discharge. Suddenly there was a severe headache, fever, chill, stupidity and difference in the pupils, which indicated an operation. Several inflamed lymph nodes were found; in the cells a small amount of pus and fibrin clot; in antrum nothing. Convalescence lasted unusually long. The malignant course is in sharp contrast to the usual course of otitis with central perforation. The author, therefore, believes that there was a simultaneous invasion of the mucous membrane and lymph nodes by streptococci, and that they had made the sinus easily penetrable. *Levy.*

A Typical Disease of the Ear.

R. MUELLER, (*Zeitsch. f. Ohrenheilk.*, Bd. 42) saw in about 12 patients, who lived in the tropics, a peculiar affection of the auditory canal. The disease begins insidiously as a feeling of fullness in the ear with ringing and diminution of hearing. Objectively there is a swelling of the auditory canal. Pain is entirely absent. In some patients, healing occurred after a few weeks, in others a severe pain lasting for weeks was experienced. After the disappearance of the disease there was usually left behind a severe hyperostosis together with tinnitus and difficulty in hearing. Ten months or several years pass before this stage is reached. The preliminary symptoms of this disease, which the author calls otitis externa ossificans, have been observed by other authors. The treatment had no effect in any case.

Levy.

A Case of Tuberculosis of the Middle Ear (Secondary).

ARTHUR H. CHEATLE. (*Jour. of Laryng., Rhin. and*

Otol., April, 1903.) H. R——, aged fifty. His wife had died a short time ago of consumption. The patient came to hospital May 29, 1902, on account of deafness, discomfort, and slight discharge from left ear for three weeks. There was swelling and dull redness of he posterior and inferior segment of the drum, with slight watery discharge. The perforation could not be precisely located. There was tuberculosis of left lung with tubercle bacilli in sputum. Later the redness and swelling diminished, showing a pinhead perforation with thick red edges in inferior segment. The discharge became more purulent and pulsated. Bacilli indistinguishable from tubercle were found in the discharge, and the patient was losing flesh.

Specimens of Tuberculosis of the Temporal Bone.

A. H. CHEATLE. (*Jour. of Laryng., Rhin. and Otol.*, April, 1903.) 1. Right temporal bone of an infant who died of general tuberculosis. A perforation in the posterior segment of the membrane. The lining membrane as seen through was thick and nodular. The ossicles were intact. The middle ear, including the antrum, was full of cheesy pus. Sections of the lining membrane stripped off from the external semicircular canal showed tuberculosis. This specimen and section were shown at the Society's meeting, February 4, 1901.

2. Right temporal bone of an infant who died of general tuberculosis. The antrum was opened during life and caries of tegmen found. The bone around operation limit showed great extension of the disease, being white and porous. There was a large gap into the middle fossa; the exposed dura mater showed tuberculosis on section. The Fallopian canal was opened by the disease, and the nerve was destroyed. The promontory was rough and carious; both fenestra were irregularly enlarged, and the labyrinth was invaded. The external semicircular canal was opened by the disease.

3. Left temporal bone of a child who died of general tuberculosis. Complete loss of membrane. The handle, short process, and neck of malleus were destroyed, also the descending process of the incus. The promontory was carious above the round window. The stapes was in position. The tympanic plate was white and carious. The middle ear cavities were full of brown pus.

Temporal Bones Removed from Patients who Died of Tuberculous Meningitis.

A. H. CHEATLE also showed the following: 4. Right temporal bone of an infant who died of tuberculous meningitis. The membrane was intact and bulging. The middle ear cavities were full of pus. The petro-squamosal sinus was well developed, and had a patent opening into the lateral sinus. The tuberculous nature of the middle ear trouble was not established.

5. Right temporal bone of a child aged two years and seven months who died of tuberculous meningitis. Small perforation behind tip of handle of the malleus. The lining membrane was thick. Middle ear cavities were full of pus. The petro-squamosal sinus was well developed. The tuberculous nature of the middle ear trouble was not established.

6. Left temporal bone of an infant aged four months who died of tuberculous meningitis. Membrane intact. Middle ear cavities full of pus. Petro-squamosal sinus well developed. Tuberculous nature of pus in tympanum was not established.

7. Right temporal bone of an infant aged one month who died of tuberculous meningitis. Small perforation in Shrapnell's membrane. Middle ear cavities full of pus. Petro-squamosal sinus was well developed. Lining membrane of the middle ear was thickened. Sections of the lining membrane showed small-celled infiltration of the superficial layers, and destruction in patches of the epithelium. No tubercle.

Specimens and Microphotographs Illustrating Tuberculous Disease of the Ear and Naso-pharynx.

WILLIAM MILLIGAN. (*Jour. of Laryng., Rhin. and Otol.*, April, 1903.) 1. Temporal bone with perforation of the tegmen tympani, the result of tuberculous disease of the middle ear; death from septic pia-arachnitis.

2. A microscopic section, showing bacilli in pus, obtained from a periotic glandular abscess.

3. Microscopic section of a tuberculous gland, secondary to tuberculous middle ear disease, showing caseous and fatty degeneration.

4. Microphotograph showing tuberculous disease of posterior surface of uvula.

5. Microphotograph of tuberculous granulation from middle ear.

A Case Illustrating Tuberculous Disease of the Nasal Cavities.

HERBERT TILLEY. (*Jour. of Laryng., Rhin. and Otol.*, April, 1903.) Patient was operated upon five years ago for tuberculous ulceration of the internal surface of the right alae nasi and anterior end of right inferior turbinal. Well-marked contraction with some loss of substance of right alae nasi. Tuberculous nature of ulceration established by microscopic examination.

November, 1902, patient was readmitted to hospital for obstruction in the left nasal cavity. A swelling consisting of pale granulation tissue was seen occupying a part of the lower region of the cartilage of septum. This was thoroughly curetted and trichloracetic acid was rubbed in. Tuberculous nature of granulation tissue was verified by microscope.

Primary Tuberculosis of the Ear. The Specimen from A Case of General Miliary Tuberculosis with Primary Focus in the Temporal Bone.

JOBSON HORNE. (*Jour. of Laryng., Rhin. and Otol.*, April, 1903.) A child, aged thirteen months, had been wasting for seven months, and had had a cough of three months' duration. No aural symptoms had been mentioned, nor had there been evidence of pain in the ear, but there was facial paralysis on the right side, and it was elicited that there had had been a discharge from the right ear for about four months.

The post-mortem examination revealed a subperiosteal abscess lying over a well-defined area of necrosed bone, immediately above and behind the right external auditory meatus.

The tuberculous nature of the disease of the ear was definitely established by tubercle bacilli being found in the tissues covering the necrosed bone.

There was very extensive disease of the lymphatic glands, general miliary tuberculosis, tuberculous meningitis with tuberculous nodules in the brain, all of these lesions being more recent than that in the temporal bone.

A Case of Cholesteatoma Removed by Operation; Facial Paralysis Rapidly Subsiding.

DUNDAS GRANT. (*Jour. of Laryng., Rhin. and Otol.*,

April, 1903.) Harry E——, aged twenty four, shoemaker, suffering from chronic suppuration of the middle ear of eighteen years' duration, but worse during the last three years, was referred to Dr. Grant by Dr. Wingrave for radical mastoid operation, as, although the discharge had slightly diminished under the local antiseptic treatment, Dr. Wingrave found signs of caries on the posterior wall, and felt convinced that nothing short of the radical mastoid operation would suffice. The radical operation was performed on October 21, 1902, by Dr. Dundas Grant, assisted by Dr. Abercrombie. Before the operation Dr. Grant noticed a very slight inequality of the action in the closing of the two eyes, but nothing amounting to paralysis. When the bone was opened in the mastoid region, a shiny, whitish-gray membrane was exposed, somewhat suggestive of dura mater; but when the opening was still further enlarged this was found to be the outer wall of a cholesteatomatous sac; this sac was then enucleated in its entirety, leaving a bony cavity with smooth walls of the size of an ordinary playing marble. During the scraping of the soft crumbling bone on the posterior wall of the meatus violent twitching of the facial nerve took place. The cavity was packed with gauze saturated with an emulsion of iodoform in glycerine; the posterior wound was not closed by sutures, but left open for grafting, and a drainage tube was inserted into the external auditory meatus. Next day there was paralysis of the left half of the face and some giddiness. Sickness persisted for four days. On November 4 the lining of the cavity by Thiersch's graft was performed by Dr. Grant. The graft was fixed in position with small pads of cotton-wool powdered with aristol. The plugs were not completely removed until the 13th; the interior of the ear was swabbed with spirit. A continuous galvanic current was applied regularly by Dr. Ramsden, the house surgeon, but scarcely any contraction was produced for a fortnight. The patient went home, and when he last presented himself for examination at hospital there was hardly any discharge from the outside wound, very little from the meatus, the facial paralysis had practically disappeared, no trace remaining except at the angle of the mouth, the noise and giddiness had gone, and the patient was greatly improved

in general health. The hearing before the operation was almost nil, and has remained much the same since. The facial paralysis rapidly subsided during the third week after the operation.

A Case of Suppurative Ethmoiditis and Frontal Sinusitis After Radical Operation for Nasal Polypi.

ADOLPH BRONNER. (*Jour. of Laryng. Rhin. and Otol.*, April, 1903.) In the Section of Laryngology at the Manchester meeting of the British Medical Association, Dr. Bronner had stated that, in his opinion, the so-called radical operation for nasal polypi was not devoid of danger, and that he knew of several cases which had been followed by meningitis and death. He was not at liberty to give details of these cases, as he had heard of them *privately*, and had no permissission to publish them. He was very sorry to have now to report a case of his own.

Miss K——, aged twenty, was seen on July 24, 1900. Both nostrils had been blocked for several years, and there had been a copious purulent discharge. No pain or special discomfort. Both nostrils were completely filled with polypi and degenerated mucous membrane of the lower turbinated bones.

On September 18, 1900, both nostrils were scraped with Meyer's ring, and the mucous membrane of the lower turbinated bones removed. Insufflations of iodoformogene and boric acid were ordered. The patient was seen again in June, 1901. There had been extensive recurrence of the polypi from the upper turbinated bone. It was again scraped.

On August 14 the patient was seen again. Numerous polypi were removed by the cold snare. There was, however, rapid recurrence. On October 28, 1902, Meyer's ring was again used under chloroform. Insufflation of aristol and boric acid were ordered. The patient was seen on November 7 and 20. There was no pain, but very slight tenderness over the right frontal sinus. There had been no recurrence of the polypi, but there was very slight purulent discharge from the region of the frontal and anterior ethmoidal cells. On December 2 the patient was brought into the hospital. For nine days she had intense pain in the nose and head, and

there was swelling of the nose and forehead. She was semi-comatose; there was well-marked swelling of the center of the forehead and bridge of the nose, extending into the cheek, and slight paresis of the right side. Temperature 104°.

On December 3, an incision was made above the right eyebrow; much pus escaped, the bone was rough. The right frontal sinus was found to be full of pus. The dura was exposed and bulging; on incision there was pus. The left frontal incision was opened and a large quantity of pus escaped. The opening was enlarged and free drainage established. The patient was relieved for twelve hours, and then became more and more comatose and died.

On post-mortem examination the anterior part of the left frontal lobe was seen to be necrosed, and evidences of purulent meningitis were seen commencing on the left side, extending backward on the base of the brain (well marked over the pons) as far as the medulla. The lateral ventricles were full of pus. The whole of the ethmoid bone was necrosed and filled with pus, and the crista galli was quite loose and detached.

In this case the infection evidently originated in the ethmoid bone.

Contribution to the Study of Otogenous Meningitis.

SCHUBE (*Arch. f. Ohrenheilk.*, Vols. 57-58) has worked on the material of the clinic at Halle, with reference to the cases of meningitis. In 6 cases the spinal cord was involved, without any important clinical changes. The process usually passes from the labyrinth into the meninges. Testing the hearing gives uncertain results. Diminution of bone conduction speaks for, but presence of this does not speak against labyrinthal involvement. If this can be positively proven, the intracranial complication should be sought, in all probabilities, in the posterior cerebral fossa. The course of the fever may resemble pyemia. There can, however, be remittent or intermittent fever, and intervals without fever. The different irritative symptoms often are absent and may be present in other diseases. The best symptom of meningitis is disturbance of the sensorium. But the diagnosis is made from an entire symptom complex, not a single one.

The differentiation between labyrinthal and meningeal symptoms is especially difficult. In regard to the diagnostic value of the lumbar puncture, the Halle clinic has changed its point of view. Formerly an increase in the leucocytes in the cerebro-spinal fluid was taken as a sign of meningitis, but additional investigations have shown that only the presence of bacteria is pathognomonic. The fresh specimen must be studied for 40 minutes as often as there is a decreased affinity for the stain. The cultivation in these cases often fails. The origin of meningitis in concussion during chiseling, has been shown as improbable. Two cases of meningitis healed spontaneously. The author had made the diagnosis, but considered the cases inoperable. *Levy.*

II.—NOSE AND NASO-PHARYNX.

The Occurrence of Rhodan in the Nasal Secretion, and its Absence in Ozena.

MUCK, Rostock. (*Archives of Otology*, Vol. XXXII, No. 2.) Rhodan (potassium or sodium) forms a normal constituent of the nasal secretion, and is derived principally from the serous glands.

One sometimes is able to obtain a very distint ferric chloride and iodine acid reaction, if we touch the pockets of the nose with our reagent paper. The accumulation of salt at this location and at the introites in general is because the nasal secretion in passing dries up in this region, and in drying the salts are here precipitated.

In chronic catarrh of the nasal mucosa the serous exudate becomes greater than the mucous; then the rhodan test is unusually striking. Inorganic salts have been shown to increase from ½ to 1 per cent.

Pure nasal hydrorrhea can be differentiated from cerobrospinal fluid by the fact that the latter does not contain rhodan.

When rhodan is unusually abundant in saliva, a very distinct rhodan reaction appears in the nasal secretion. The opposite holds true in the absence of rhodan in saliva.

In 20 cases of genuine ozena examined in one day, was a

weak reaction for rhodan found. The fluid contained in Gottstein's packing gave no reaction. Fatty degeneration of all glandular epithelium is the most constant condition present in ozena; consequently the serous secretion is diminished in quantity and in its constituent parts. *Campbell.*

An Automatic Method of Demonstrating the Accessory Cavities of the Nose.

BRUEHL, Berlin. (*Archives of Otology*, Vol. XXXII, No. 2.) A fresh or alcohol skull is macerated one quarter; the soft parts are dissected off and it is decalcified in a 10 per cent. nitric acid solution. Decalcification is complete in two to three weeks. After washing in running water, the skull is hardened in alcohol, then dehydrated and finally subjected to a mixture of equal parts of absolute alcohol and ether. The specimen is now placed in carbol-xylol. On the following day if the bone has been dehydrated and decalcified, it is cleaned.

An opening is now made in the septum of the frontal sinus, its nasal canal is closed off with cotton and Wood's metal, heated just enough to melt it, is poured into the sinus with the specimen held on its side. The sphenoidal and ethmoidal sinuses are then filled, and the maxillary antrum is filled from an opening in the canine fossa.

Enlarged blood vessels appear through the bone and the furrows in the bone for the vessels may be outlined with water color. *Campbell.*

A Case of Endothelioma Occurring Within the Nasal Fossae.

WM. HITSCHLER AND GEO. B. WOOD, (Philadelphia. *Philadelphia Medical Journal*, May 2, 1903.) The primary endothelioma of typical character is very rare; hence the interest of the case reported. Patient was 44 years of age, a farmer by occupation, with a history of epistaxis from the left nostril followed by gradual closure. There was little or no pain. During two years polypi had been removed. Five months previously patient noticed a forward and upward bulging of the left eyeball. Examination showed the left nasal fossa completely obstructed by a grayish, shining, lobulated mass, bleeding freely when touched by the probe.

A large part of the mass was snared off, followed by profuse bleeding, requiring packing.

Examination of the part removed showed the growth to be made up of connective tissue stroma, supporting numerous alveoli, which varied greatly in size and shape, and were formed by more or less regular rows of cuboidal cells, the nuclei of which are round and fairly deeply stained. In some parts of the growth a more malignant disposition was manifest in the arrangement of the alveoli.

The patient was urged to have a more radical operation but refused and disappeared from observation.

Richards.

Orbital Cellulitis; Empyema of Ethmoid and Frontal Sinuses; Brain Abscess; Pneumococcemia; Pneumonia; Death.

E. GRUENING. The patient (L.S.), 26 years old, butcher, was admitted to Mt. Sinai Hospital with history of agonizing frontal headache, pain in both eyes, eye lids swollen, especially on left. Nasal discharge. Chills, fever. No vomiting. At times becomes unconscious—at others delirious. These symptoms having begun with an acute onset six days previous to admission.

Physical Examination:

Throat congested.

Ears, negative.

Nose: Between left middle turbinated wall and external wall of the nose there is a thin streak of white pus.

Eyes: Left, marked chemosis of both lids, redness extending over bridge of nose, and down on cheek. Marked tenderness at inner angle of orbit, over ethmoidal sinuses. No tenderness over frontal sinuses. Marked conjunctival edema and congestion; motility of eye upward impaired. The left eye is more prominent than right eye, the globe being forced forward and downward. Pupil slightly larger than the right. Ophthalmoscopic examination negative.

Temperature 103.8°. Pulse 76. Respiration 26.

March 29. Operation. Incision and damage for orbital cellulitis. Osteotomy and drainage for empyema of ethmoidal and frontal sinuses left side. Muco-pus from cavity of ethmoidal cells. Much pus from the orbit. Lachrymal gland removed.

Culture of orbital cellulitis:
Pneumococci and staphlococci.
Culture from ethmoidal sinuses:
Pneumococci.

Roof of orbit opened. Cavity of frontal sinuses entered; contained pus. Mucous membrane of cavity much thickened. Entire floor of the sinus, roof of orbit, several polypi and exostosis removed. Drainage and iodoform dressing.

Culture from frontal sinuses: *No growth.* Very slight improvement after operation. Two days later (March 3) temperature rose to 105.4° with a pulse of 90. Respiration 28, having had a chill lasting 20 minutes. White blood count: 33,000. Rigidity of neck; quite delirious at times. Lumbar puncture 55 c.c. obtained.

Report on same: Polynuclear leucocytes, fewer mononuclear leucocytes; no red blood cells; spreads negative; culture negative; albumin increased.

This A. M. another chill. Temperature 107; pulse 124; respiration 34. Change of dressing. Slight sero-purulent discharge. Renewed wet (10 per cent. carbolic). Patient gradually becoming stuporous; involuntary urination and defecation. Ophthalmoscopic examination: Considerable dilatation of veins of the disc, especially the left.

Operation. Exploration of left frontal lobe. The inner plate of the skull found softened (surface forming roof of frontal sinus). On exposure of dura there was a gush of foul smelling pus from an extra-dural abscess. Dura opened, freeing over an ounce of foul pus from a brain abscess the size of a walnut. Exploration of cavity with finger; *no definite abscess wall* could be made out. Dry dressing.

Temperature down to 103.4° after operation. Patient could be made to answer questions.

Culture of brain abscess; pneumococci: On following day patient became worse. Temperature had fallen to 99.6°; but on morning of this day patient had a chill followed by a rise to 105.8°. Pulse 164; respiration 50. White blood count. 20,200.

In the evening a general convulsion. Involuntary urination; pulse very weak.

Dressing. Purulent discharge and necrotic brain tissue

from wound. Convulsions repeated—of longer duration. Blood culture (12 c.c.) positive in plates and flasks; pneumococci.

April 5. Coma; thirteen convulsions; white blood count 20,000; respiration 50-60. Signs of pneumonia, base of right lung; pulmonary edema. Death, 7:35 p. m., April 6.

Wound examined. No other brain abscess; spinal fluid, no growth in culture. *Author's Abstract.*

Operative Uncovering of the Bulbus Venae Jugularis Internal.

PIFFL (*Arch. f. Ohrenheilk.*, Vols. 57-58) laid bare the bulbus, following Grunert's method, in a case of sinus thrombosis at the Zaufal's clinic. He then studied the anatomic relationships on the cadaver, and convinced himself that the facialis is in danger, especially when the sinus lies forward. He therefore devised another method, and employed it in one case. The incision for the mastoid operation was prolonged downward several cm. and the periosteum was bluntly detached from the inferior and anterior surfaces of the os tympanicum to the fissura glaseri, and the auditory canal detached anteriorly and inferiorly. Then the inferior and anterior bony auditory wall was bitten off by bone forceps to the recessus hypotympanicus. Finally the processus stylomastoideus was removed. By this time the bulbus was visible and was laid bare by removing the surrounding structures. One must be careful not to go as far forward as the carotid. *Levy.*

Otologically Important Anomalies of the Cranial Sinuses; the Accessory Sinuses, and Importance of Veinous Communication.

STREIT. (*Arch. f. Ohrenheilk.*, Bds. 57-58.) In spite of the great importance of vessel variations in the cavum cranii, especially for the aurist, the literature on the subject is very scant. The author has done a great service by examining, on several hundred skulls, the relationships of the sinuses and veins which are important in otology, and by collecting the literature. *Levy.*

Caseous Empyema of the Nasal Accessory Sinuses.

STIEDA (*Zeitsch. f. Ohrenheilk.*, Bd. 42) observed three

cases. It was necessary to operate on the nose on account of its being filled with fetid, smeary, caseous masses. In all the cases the disease was manifest from weeks to months before the treatment. Fistulae and abscesses developed in the upper eyelid and inner canthus, which communicated with the nasal cavity, and at times sequestra appeared. In one case the lateral wall of the antrum was destroyed. The author believes that the primary condition was a suppuration of the ethmoid cells and antrum, and by ulceration of the bony wall, the pus sac had pushed itself into the nasal cavity. The empyema then became cheesy degenerated, and secondarily infected. In all three cases the affected territory was entered through the bony nose. *Levy.*

The Effect on Certain Subjective Aural Manifestations by Treatment of the Genital Spot of the Nose.

HAUG. (*Monatschrift f. Ohrenheilk.*, Bd. 37.) It is well known that Fliess has long claimed that hypertrophic conditions in the nose, especially on the inferior turbinate and tuberculum septi, cause by reflex action dysmenorrheic symptoms, and that treatment of the former cures the latter. He now reports a number of cases in which aural pain and tinnitus, which could not be explained by the objective appearances, became worse at the time of the menses, were partially healed and partially benefitted by cauterization of the swollen portion of the nose, called by Fliess the "genital spot." He recommends the advisability of considering the possibility of such a relationship in similar cases. *Levy.*

Acute Inflammation of the Pharyngeal Tonsils.

BECKMANN, H., (*Berlin Klin. Wochensch.*, 1902) regards acute tonsilitis as the most important of the affections of the upper air passages. The tonsils are swollen, red and covered with muco-pus. The secretion can dry and take the form of crusts. The affection runs the course of an acute, infectious cold. The chronic swelling of the turbinates is a secondary development. The accessory sinus may also become affected. "Over 95 per cent. of the cases of acute and chronic otitis suppurativa are caused by pharyngeal tonsillitis." The so-called rheumatic facial paralysis, chronic pharyngitis, and angina follicularis arise in the same way. Muscular

rheumatism, endocarditis, chorea, influenza, scarlatina, always have a port of entrance in the pharyngeal tonsils, and pleuritis, pneumonia, nephritis and osteomyelitis often have. The frequent existence of tuberculosis of the tonsils leads to the conclusion that basil meningitis, vertebral and retropharyngeal abscesses take their origin here. The author likewise believes that affections of the apices of the lungs are to be explained by infection carried by the lymph channels from the tonsils. The treatment must be undertaken with this in mind. In case of enlargement, they are to be completely extirpated, even during the presence of an acute otitis media suppurativa.

The abstractor regrets, on account of the learned and doubtless correct views of the author, that the author was compelled to stop because of lack of time. *Levy.*

Cases Illustrating the Beneficial Effect of Mucin in Atrophic Rhinitis.

STUART-LOW (*Jour. of Laryng., Rhin. and Otol.*, April, 1903) said that the history of the cases, selected from many others similarly successful, showed well the intractableness of atrophic rhinitis to the methods more usually adopted, and proved the beneficial effects of the mucin treatment.

The first case was that of a young man, a carpenter by trade, who had suffered from severe atrophic rhinitis for many years. He had been a patient at numerous hospitals, and had been under various systems of treatment, having been obliged to leave workshop after workshop owing to the complaints of his fellow-workmen at the bench of the fetor of his breath. He had gone in for the mucin treatment thoroughly, observing and practically carrying out every detail, as he found at once that he obtained much relief from doing so. He now expressed himself as quite well and comfortable, and examination of the nose revealed neither crusts nor fetor. Mucin-feeding had been carried out, from eight to twelve mucin tabloids a day having been taken, which gave relief to the accompanying distressful gastric conditions. He was now following his usual employment uninterruptedly, even in the dusty air incidental to the trade, and only syringing with the warm mucin solution daily at bedtime. Mr. Stuart-

Low wished to thank Dr. Peter Ambercrombie for kindly handing him over this aggravated case for treatment.

The second case was that of a parlor maid who had been obliged repeatedly to leave good situations on account of the sickening odor of her breath. She had been attending doctors and hospitals for years. Two years had now elapsed since she first had the mucin treatment, and she was eighteen months in her last place, having got rid of all local ailment and greatly gained in her general health. The treatment was carried out very thoroughly for some months, but now she confessed to syringing only some three times weekly. Her engagement to be married was in jeopardy at one time, owing to the horrible stench, but now she was married, and there was no rumor of separation or divorce.

The third case was that of a receiving girl in a laundry, working much in a foul and dusty atmosphere. She had been under treatment for years at various hospitals and dispensaries. The mucin treatment had been adopted for six months, being thoroughly carried out, and with most satisfactory effect. She now only syringed three or four times a week with the warm mucin solution, and at bed time.

Mr. Stuart-Low further remarked that the preparation of the solution and the method of using it were practical points of importance. The solution should be made by rubbing up one tabloid and one soloid of mucin (Messrs. Borroughs and Wellcome) in 2 fluid drachms of warm lime-water and 6 drachms of warm sterilized water, or 1 drachm of saccharated lime-water may be used instead of the plain lime-water. This solution may also be employed as a spray for the nose and throat. If desirable, this may be more diluted, and the tabloid may be substituted for the soloid in very sensitive patients. In beginning the treatment, the specialist should see the patient daily for a week if possible, and the inner lining of the nose ought to be well massaged by means of a suitable probe carrying cotton-wool saturated with the warm mucin solution. In this way all crusts are effectually removed. This process is sometimes accompanied by a good deal of hemorrhage from the surface from which the crusts are rub bed off, but after a few applications the bleeding soon stops and crusts cease to form and accumulate. Instructions are

given to syringe morning and evening, although very soon it is only necessary to syringe once daily, and preferably at night. Directions are given that the syringing be done forcibly from above with an ordinary glass nasal syringe. The head being overextended, is thrown as far back as possible, and the left hand is used to keep it back by pressure under the chin, while with the right hand the syringing is carried out. With the head in this overextended position swallowing is prevented, the nasal lining is well flushed, and the fluid passes directly into the esophagus, so that the danger of forcing any liquid into the middle ear is avoided. Simply spraying the nose and throat is sufficient in mild instances. Mr. Rogers, of 327 Oxford street, has now perfected a set of mucin sprays for the nose, throat and larynx. Dr. Holloway's aluminium probes, made by Messrs. Arnold, are very suitable for working with mucin, as they are very light, can be very easily bent to any angle, and are very cheap.

Mucin given internally is of much a sistence in remedying these cases, and eight to twelve mucin tabloids may be taken daily—two before and two after the meals. This has the effect of relieving the flatulent dyspepsia, overcoming the constipation, improving the appetite, and greatly benefitting the general condition. He also insists on these atrophic rhinitis patients avoiding close, heated rooms or sitting too near fires—and it is singular how often they are fond of doing so—and that dusty air should be shunned as much as possible. Walking a few miles a day, especially in the cold morning air, is also recommended, and instructions are given to inhale deeply and frequently through the nose as they go along. In this way the nose and its accessory cavities are well aerated and a healthier tone more quickly induced in their mucous membranes. Dr. Low has found that common salt is almost invariably very largely partaken of by this class of patients, and has a deteriorating influence on the quality of the mucous secretion, so its use is always peremptorily prohibited.

Dr. P. H. AMBERCROMBIE testified to the great benefit derived from the mucin treatment in several of his hospital patients suffering from atrophic rhinitis. He also remarked on the great improvement he had seen in symptoms referable

to the digestive system following a course of mucin feeding.

Dr. JOHN STEWART MACKINTOSH said he had made some trial of mucin in general practice. He found it useful in atony of the bowels in aged people where a tendency to fecal accumulation existed. A regular action of the bowels was obtainable thereby without the aid of aperients previously required.

He had had very gratifying results in a case of gastric hyperesthesia where gastric ulcer had been present some years previously. Before taking mucin the patient could only take liquid nourishment, any solid food causing great pain, probably owing to the presence of a painful scar. After taking mucin solid food of all kinds could be taken without discomfort. In this case mucin was combined in tabloid with menthol, and the menthol, being a nervine analgesic, may have played some part in the cure. He had seen excellent effects in a case of rectal carcinoma; the appetite increased, and pain, which was previously severe, almost disappeared. Injection downward through the colotomy opening showed the great cleansing power of a solution of mucin. He also used it in a case of gastric ulcer with a dangerous attack of hematemesis. The hematemesis was not repeated, and the pain on taking solid food disappeared under the mucin treatment.

Dr. HEMINGTON PEGLER inquired as to the *modus operandi* of mucin as a therapeutic agent.

Dr. ANDREW WYLIE said he had treated several cases suffering from atrophic rhinitis with mucin, and found it most beneficial. In three severe cases of well-marked atrophic rhinitis which had been treated with alkaline lotions for months, and with no result, improvement took place in a few weeks from the thorough spraying of the nasal cavities with the mucin solution. The hard crusts softened and disappeared, and in six weeks the patients were comparatively quite well. He doubted if Mr. Stuart-Low could cure a well-marked case in a week, and he found the strength of Mr. Stuart-Low's solution too great. After the crusts were removed the patients could not, in his opinion, without pain, use a stronger solution than one soloid in 3 ounces of water (instead of one soloid to the ounce, as recommended by Mr. Stuart-Low). He inquired of Mr. Stuart-Low how long the

treatment should be continued, and his opinion as to the strength of the solution of mucin advisable.

Dr. JOBSON HORNE considered that one might be unduly impressed with the therapeutic value of mucin in atrophic rhinitis. He had obtained similarly good results with lanoline. After the removal of the crusts and the discharge by douching, the atrophied parts had been massaged with lanoline on cotton-wool wrapped tightly round suitable probes. The good results he attributed as much to the careful application and massaging as to the medicament itself.

Dr. VINRACE asked the President if he might take it forgranted that, with the head fully extended, fluid syringed into the nostrils could not be swallowed. He also asked whether any of the accessory cavities of the nose would be liable to be flooded by the fluid.

Dr. WINGRAVE hesitated in accepting the local effects of mucin in removal of crusts, but considered the gastro-intestinal results of some value He thought that the duration of treatment was far too short to admit of any definite expression of opinion.

Mr. STUART-LOW, in replying, said the action of mucin was local and general. Locally it was hygroscopic, and had a retarding influence on bacterial growth; it had also considerable cleansing powers, and being combined with an alkali, the acid present in the lining of the nose in this disease was neutralized. He thought it had some influence also in retarding the dermal changes that happened in the mucous membrane. The massage certainly assisted in removing and preventing the re-formation of the crusts; but many cases had improved equally well that never had repeated massage, having failed to attend regularly, and had only the syringing done. The mucin internally, and the daily massaging with the warm mucin solution, however, certainly more quickly got the worst feature of the disease ameliorated.

The admistration of mucin tabloids had a wonderful influence in remedying the gastric disturbance that almost invariably accompanied the local symptoms. This was partly owing to mucin supplying the deficient protective mucous coating of the stomach, but mucin might have also some capability of improving the quality of the mucous secretion,

which was always perverted and depreciated. There was no danger of injecting the fluid into the nasal accessory sinuses in the overextended position when syringing.

Deflected Septum Treated by Moure's Operation.

PEGLER. (*Jour. of Laryng., Rhin. and Otol.*, April, 1903.) Three cases were shown to exemplify the result of Moure's operation for deflected septum, all of which had been operated upon sufficiently long to guarantee a permanent rectification. They were selected from a series of patients aged from ten to fifty years, and though it was not pretended that a perfectly flat surface was presented, still, the angle of deflection was all but effaced, and comfortable nasal respiration was insured through both fossae. The operations had been performed under gas and ether anesthesia in the sitting posture, Moure's incisions being adopted, but substituting the exhibitor's septotome (shown at the meeting) for the former's septum scissors, over which, he ventured to think, it offered certain advantages, owing to the altered shape and size of the blades. The septum had been maintained in its new position by India rubber splints, combined in various thicknesses and shapes to suit each case; for whilst the exhibitor thought Moure's incomparably the best of the metallic tubular splints, he had not found it so shapable a dilator as he had anticipated. The India rubber had effected the same purpose whilst giving less pain, or, at least, inconvenience, especially in keeping itself in position. Following the recognized practice, he had frequently reduced the inferior turbinals on one or both sides to gain the necessary space. The incisions had been made from the front toward the back part of the septum, apparently the reverse order to that of Moure (see Journal of Laryngology, Rhinology and Otology, April, 1901), and, as regards the superior incision, experience taught him that it should not be made too high up in the receding angles of the upper lateral cartilages. Occasionally, especially when the deflection had been very pronounced, subsequent trimming along the line of union had been found advisable on one side or the other.

CASE I.—A woman aged twenty-three, the subject of nasal polypi in both cavities; Moure's operation performed for de-

flection of the triangular cartilage to the right, in order to reach the polypi which were obscured by it. No sooner had the obstruction been removed than the pent-up polypi obtruded themselves and were reached by the snare.

A similar case in a patient aged fifty would have been shown, but she had written excusing herself, owing to absence abroad with her mistress. She sent an excellent report. Both nasal cavities were completely occluded by polypi, the condition on one side being intensified by deflection of the septum to the left. Rectification was effected, and the polypi descended immediately upon removal of the splints. Both this and the previous case were subsequently curetted for the removal of pedicles and softened bone.

Case II.—A young man, aged twenty-five, upon whom Moure's operation was performed at the Metropolitan Ear, Nose and Throat Hospital for uncomplicated nasal obstruction, in the presence of Mr. Walton Browne of Belfast. There was deflection of the septum to the right. Some trouble was experienced with the healing of the superior or roof incision, but it was afterward cleared by paring with the probe-pointed septum knife, and the ultimate result was very good.

Case III.—A young gentleman, referred on account of absence of nasal resonance. He also complained of nose-bleeding and constant and recurring colds in the head. There was a history of a severe kick at football three years ago. The triangular cartilage was seen to present a convex surface in the left fossa, and was greatly thickened. Mucous membrane spongy, deep red, and bleeding on the slightest touch. Examination of the right chamber showed that behind this the osseous septum was also deflected to the left. Moure's operation was carried out in the first instance, the basal incision being extended well back into the vomer. Subsequently, owing to the structural narrowness of the bony fossae, it became necessary to reduce the left inferior turbinal anteriorly to less than one-third of its extent. Even after this an adhesion formed between the remainder of the turbinal and the septum, and on the right side an adventitious crest required to be removed, because this fossa was now too much encroached upon by the alteration of the space. The case was slow and presented many difficulties, but the result

is now satisfactory and the patient's health is greatly improved.

Large Naso-pharyngeal Fibro-myxoma, with Prolongations Extending to Anterior Nares.

DONELAN. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) The patient, a youth aged 18, had suffered from marked nasal obstruction and defective speech from his second year. When seen, he appeared to have a large mucous polypus in each nostril, and a growth about the size of a walnut projected slightly below the soft palate, in pulling or pushing which the polypi were moved. The large growth was sessile, springing from the vault of the pharynx immediately behind the vomer. It was seized with forceps and came away together with the anterior prolongations, leaving the patient's nasal passages perfectly free.

A Case of Naso-pharyngeal Malignant Disease.

BARCLAY BARON. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) The patient, a woman aged fifty years, had complained of deafness, obstructed nostrils, and discharge of blood and pus, for about eight months. Three months ago a hard, irregular growth had been scraped out of the naso-pharynx, with relief of all the symptoms. They had all returned, and there was much pain in the jaw and temple, especially on the right side, which was swollen. The naso-pharynx was filled with the growth, which protruded into the nostrils, especially the right one. It was hard and ulcerated. The nature of the growth was uncertain, lympho-sarcomatous-looking in parts, but with islands of epithelial cells in others. Dr. Baron asked for suggestions as to treatment; he was not inclined to curette again, but preferred either to leave it alone or deal with it more radically.

CRESSWELL BABER said the disease seemed to affect not only the naso-pharynx, but also the nasal cavity on that side. Therefore, if any operation of a radical character were performed, it would either have to be through the palate or an external operation.

Dr. MCBRIDE said this case seemed to him to be one of very great interest. There was, to start with, the growth in

the naso-pharynx, and also one in the right nostril. He had no doubt that the pathological report was absolutely correct. The one point which struck him forcibly was that in a malignant case one would have expected more marked ulceration and sloughing than had taken place in this case after the removal of the growth. Then, another point arising in connection with that just mentioned was that this was probably a lympho-sarcoma; it would be worth while to try large doses of arsenic. He had seen several cases of lympho-sarcoma disappear wonderfully quickly under the influence of arsenic. He called to mind one case with a very large tonsil, which was reduced almost to its normal size by this means. The patient died of malignant abdominal disease within a relatively few months afterward in the North. She went to a home, but he was unable to hear the details of the last illness, and there was no post-mortem. In connection with malignant disease, he might refer to a case of extreme interest which he had to deal with some time ago. The patient, a gentleman, came to him with a very large ulcer in front of the epiglottis, at the back of the tongue, while there was a large, fixed, glandular mass in the neck. It looked specific, and he gave him iodid of potassium and mercurial inunctions, but they had no effect at all. He then tried him with large doses of arsenic, but this also was of no use. He might say he wished to punch a piece out for microscopical examination, but the patient refused to allow him. He went on with the iodid and arsenic for a long time, but without much benefit. Later the patient met a friend in Glasgow, who acted somewhat unprofessionally, but nevertheless for the patient's good. The patient's friend saw his prescriptions, and ordered him, instead of arsenic, cacodylate of sodium—another arsenical preparation. In about five weeks' time he said to him, "Go and show yourself to Dr. McBride." He came, and was undoubtedly very much improved. The ulcer had quite healed, but the cervical tumor remained. Later on he died, but the speaker did not know from what cause, and was unable to give any histological history of this case.

Mr. SPENCER said that cases of lympho-sarcoma differed from other forms of malignant disease, inasmuch as a surgeon could operate on them partly and remove a part of the

growth with benefit to the patient. He should advise removal piecemeal, or that a large portion should be removed, and that this treatment should be followed by giving arsenic and iodid of potassium, which drugs should give considerable benefit for a long time. There were many cases of malignant sarcoma—not only the most malignant and generally considered hopeless cases, but also those moderate forms of the disease—where one could do a partial removal with benefit to the patient. As regards arsenic, undoubtedly there were certain preparations of this drug which were more valuable than others in their action. He remembered a case which he had seen with Dr. Hall, and in which he had taken away portions of a large mass of lympho-sarcoma from the neck, where they had considerable difficulty in finding the particular preparation of arsenic which was most suitable to the case; in this case it was, so far as he remembered, the hypochlorid. This might explain what had been said of the new one, the cacodylate of sodium.

Dr. TILLEY remarked that he had had the opportunity of putting his finger into the post-nasal space, and he found its posterior and upper parts were covered by a large, well-marked, ulcerated surface, which was somewhat hard to the touch. No bleeding followed the examination. He was rather inclined to doubt the probability of its being a lympho-sarcoma. The feel of the ulcerated surface was suggestive of epithelioma. He would suggest that, if operative treatment were attempted, a laryngotomy tube should be first inserted, a sponge placed above the larynx, the soft palate divided, and, if necessary, some of the hard palate also removed. Such measures would give a full view of the growth, and hemorrhage could be readily controlled.

Dr. BARON thought that the method mentioned by Dr. Tilley was the only one likely to do any good. For a case like this a curetting operation was of no value, since the disease was too deeply situated. He had left a section with the Morbid Growths Committee, in case they cared to make use of it.

Growth in the Post-nasal Space, Appearing Below the Soft Palate, in an Infant.

FITZGERALD POWELL. (*Jour. of Laryng., Rhin. and Otol.*,

May, 1903.) The mother stated the child cried as if it "had a stoppage," and during sleep made a whistling noise. She said that she had noticed it from the time of the child's birth, and that the noise was not any worse now than it was then. There had been no discharge or hemorrhage from nose. The child was flabby, and backward for its age.

On examination, a reddish-looking growth, a little larger than the uvula, was seen protruding below the margin of the soft palate. On seizing it with a pair of forceps, and running the finger up along the growth, it was felt to be elongated and pedicle-shaped, growing from the vault of the pharynx. Considerable traction was made on it with the forceps, but it appeared to be tough and resisting.

Septotome for Use in Moure's and Other Operations for Deflection.

PEGLER. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) The instrument was an adaptation of existing patterns of the best design, and could be had in two sizes, differing only, however, in the length of the cutting parts, which measured 1·75 and 2·25 centimeters (about 5-8 and 7-8 of an inch) respectively. These blades were modified from those of Moure's scissors, but they were narrower, somewhat probe-ended, for the protection of the limina vestibuli; their cutting edges were all but parallel, and they were symmetrical. Moreover, their necks or shanks were much less curved or bowed, and at the junction of the latter with the blades there was no bending on the flat. The remainder of the instrument closely resembled the straight-cutting pliers of Asch, but there was an addition of two powerful springs. The result of the combination was a simple and handy septotome, which worked well in practice. The springs insured the disengagement of the blades after closure upon the septum, an action which expedited operation, whereas strength and precision were secured by symmetry and the absence of angles in the shanks. Of the two sizes, the smaller was probably the more generally applicable; the slight increase in the length of the blade in No. 2 could scarcely obviate the necesity for extending the primary maxillary incision in osteo-cartilaginous deflections. The septotome was made for the exhibitor by Messrs. Mayer and Meltzer.

Tumor of the Nasal Septum in a Woman Aged Thirty-three.

HUNTER TOD. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) The tumor grew from the anterior part of the septum, on the left side, and almost protruded from the nostril. There had been several attacks of severe-bleeding. The growth was polypoid, with a sessile base. Only a small piece had been removed, in order to obtain a microscopic examination. There was considerable bleeding after this small operation, the nose requiring to be packed for some hours.

Frontal Sinus Disease, Showing Marked Expansion.

F. J. STEWARD. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) Alfred G——, aged thirty-six, was first seen on January 23, 1903, and gave the following history: Toward the end of 1901 he had developed nasal obstruction, and in December some polypi had been removed. In the following May a swelling had formed on the left side of the nose, close to the inner angle of the orbit; this had gradually increased in size, and burst a month later, discharging yellow pus. After about a month the sinus had healed spontaneously. The patient had been well until September, 1902, when the present swelling of the frontal region had commenced and steadily increased, without pain or any other symptom, except occasional discharge from the left nostril.

When seen on January 23 there was marked swelling in the frontal region, clearly due to expansion of both frontal sinuses, the most prominent part projecting fully one inch beyond the normal surface of the bone. Pus was also seen in the anterior part of each middle meatus. A few small polypi were removed from the left side, and an attempt was made to pass a cannula into the frontal sinus, without success. During the past fortnight free discharge had taken place from both nostrils, and the frontal swelling had markedly diminished, although it was still considerable.

The chief points of interest in the case appeared to be (1) the great expansion that had taken place without perforation; (2) the rapidity of the expansion; (3) the rapid diminution of the swelling during the last fortnight; and (4) the fact that the distension of the left frontal sinus did not lead to discharge through the old sinus.

Dr. DUNDAS GRANT said there seemed to be some softening of the bone, apparently periostitis, associated with the frontal sinus suppuration. He should be disposed to treat it actively with antisyphilitic remedies. Sometimes in this region one met with tuberculous disease of the frontal bone, but in this case he should first think of syphilis; so far as his experience went, when a frontal sinusitis was pointing to the surface of the bone it did not select that region. He thought there must be some specific condition present.

Mr. STEWARD, in reply, said that the patient had been treated with antisyphilitic remedies, but with no appreciable benefit.

Case of Disease of Both Frontal Sinuses.

FURNISS POTTER. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) The patient had been under observation for two and a half years, the only trouble complained of being discharge from the nose. This had not been profuse, the patient not requiring to use more than two handkerchiefs a day, but was increased by cold weather. The drainage was ample, the fronto-nasal canals being especially patent, a curved probe being able to be passed into either sinus with great ease.

There was marked tendency to the recurrence of polypi in the neighborhood of the fronto-nasal canals, which had been repeatedly removed by snare and curetting. The patient was a soldier, and had been ordered to a station where it would be impossible for him to remain under observation. The case was shown as one in which the indication was not considered sufficient to justify the performance of a "radical" operation.

Columnar-Celled Carcinoma of the Naso-Pharynx.

DR. BRONNER. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) The patient was first seen in April, 1898, when he complained of nasal obstruction and discharge from the nose. There was a good deal of hypertrophic rhinitis, and a small, soft tumor could be felt in the naso-pharynx growing from the roof and posterior wall. It bled freely on touch. A piece was removed and examined by the Clinical Research

Association, who reported that "the growth from the naso-pharynx is a very soft columnar-celled carcinoma, covered with intact mucous membrane. The character of the growth suggests an origin in the antrum."

Insufflations and a formalin spray were used, and part of the growth was removed every three or four months, until May, 1902. It was then rather larger than when first seen, but did not project below the soft palate, and only slightly into the posterior nares. From that time the growth spread rapidly, and the patient died in October, 1902.

At the time of death there was well-marked exophthalmos and optic atrophy, with cerebral symptoms. There had never been much pain.

The case was of interest in many respects. Columnar-celled carcinoma in the naso-pharynx was very rare; the growth, although of the soft type, had only slightly increased in size in four and a half years. Was it possible that the application of formalin had arrested its growth? The absence of pain was also very unusual.

Sir FELIX SEMON, in reply to Dr. Bronner's question, said he did not put much belief in the efficacy of the formalin injection; it was the nature of these cases to be of long duration. It was, indeed, well known that malignant disease in the nose took a much longer course than malignant disease in many other parts of the body, and a duration of three or four years for a case of malignant disease of the nose was nothing very uncommon; he had seen several cases where it had existed as long as that. He was not prepared to say offhand that columnar-celled carcinoma grew more rapidly than the squamous variety, but in this connection he would mention the following case: He had now under his care a girl aged twenty-one years, with a soft growth in the posterior part of the nose, and with enormous infiltration of the cervical lymphatic glands on both sides of the neck. The patient had been seen by various observers, and amongst others by Dr. Dundas Grant, who would perhaps remember that the case had been almost stationary for a period of more than six months. At the present time it was making very little, if any, progress.

Dr BRONNER asked Sir Felix Semon if he had not noticed

that the soft columnar-celled carcinoma grew much quicker than the squamous kind. The softer and more vascular a carcinoma was, the quicker was its growth in most cases.

Dislocation of Bones of the Nose, Due to Polypi.

KELSON. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) The patient had suffered from nasal polypi for fifteen years and nasal deformity for six years. The left nasal bone was separated from the frontal, ethmoid and superior maxilla, and was perforated from pressure. The patient had no headache and only very slight discharge (muco-purulent).

Bleeding Polypus of the Nose in a Girl Aged Fifteen.

KELSON. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) The growth originated below the anterior extremity of left-superior turbinate body, and was first noticed four months ago. It had twice been removed with temporary cessation of the hemorrhage. Microscopical examination showed a similar structure to the ordinary mucous polypus, but with more round-cell infiltration.

III.—MOUTH AND PHARYNX.

Two Cases of Adhesion Between the Soft Palate and the Posterior Pharyngeal Wall, the Result of Tertiary Syphilis, Operated on with Good Results.

P. H. AMBERCROMBIE. (*Jour. of Laryng., Rhin. and Otol.*, April, 1903.) Case 1—Mrs. D——, aged thirty-six, contracted syphilis eighteen years ago, the primary sore appearing on the labium minus. Treatment was very insufficient, being only carried out for a period of a few weeks. About four years ago—i. e., fourteen years after the chancre—a gumma in the neighborhood of the knee developed, and in November, 1901, the pharynx was similarly attacked. Apparently, neither of these two illnesses was recognized as of a syphilitic nature, and the treatment was very ineffective.

In March, 1902, about five months after the first appearance of the pharyngeal gumma, the patient consulted the

late Mr. Lennox Browne, who at once recognized the true nature of the disease and prescribed suitable treatment. By this time, however, the naso-pharynx and oro-pharynx were completely shut off from one another by the adhesion of the soft palate to the posterior pharyngeal wall.

Toward the end of last March Mr. Browne operated, with the view of establishing a communication between the nose and mouth posteriorly, and so relieving the patient from the unpleasantness arising from her inability to blow her nose, which was constantly full of offensive discharge.

Mr. Browne made a large opening in the adherent soft palate, and then kept it open by the daily passage of bougies. For over seven months bougies were passed almost daily, but in spite of this the opening gradually closed, until it would only admit a No. 10 urethral bougie.

About this time Mr. Browne's fatal illness had progressed so far as to incapacitate him from trying any further operative measures, and he handed the case over to Dr. Abercrombie, who on November 21 of last year operated on the patient, after thoroughly cocainizing the parts.

With a suitably curved, probe-pointed, double-edged knife, cutting laterally, the connection between the soft palate and the posterior pharyngeal wall was severed as thoroughly as possible. A rubber drainage tube was then passed along each nostril, and one end brought out by the mouth on each side, and attached to the other end of the tube by means of safety pins. These tubes had the effect of pulling forward the freed soft palate, and of preventing it reuniting to the posterior wall. The tubes were worn for ten days, being removed, cleansed and reinserted daily. The nose was syringed several times a day with chinosol solution.

The parts healed well, and at the end of a fortnight there was a large opening, and the patient could freely blow her nose and breathe through the nostrils.

Since then the opening had gradually diminished in size, and Dr. Abercrombie was desirous of having the opinion of those present whether further operative treatment was advisable.

Case II.—A man aged forty-eight, a laborer, was sent to Dr. Abercrombie by Dr. Mackintosh of Mortlake, suffering

from an obstructed nose, the result of tertiary syphilitic adhesion of the soft palate to the posterior pharyngeal wall. The appearance of the throat in this case was very s milar to the other. There was a small opening, sufficient to admit a probe, a little to the right of the middle line, and this communicated with the right nasal fossa posteriorly. The primary sore developed on the penis thirteen years previously, and the treatment was very insufficient. The throat began to be affected just over two years ago, and for about six or eight months the nostrils had been blocked.

The treatment in this case was the same as in the other, but the immediate result of the operation was not so good.

Both patients were present for examination, and in both the openings were gradually getting smaller.

Cystic Cholesteatoma from the Left Supratonsillar Fossa.

WYATT WINGRAVE. (*Jour. of Laryng., Rhin. and Otol.*, April, 1903.) The specimen was removed from a patient under the care of Dr. Jakins—a young woman, aged eighteen, who had no symptoms, but accidently discovered "something wrong" with her throat on looking into a mirror. It presented the appearance of a sausage-shaped tumor, about an inch and a half long and one third of an inch thick, hanging from the left supratonsillar fossa, curving over the tonsil, and reaching the glosso-epiglotic fossa. It was of a pearly-pink color, slightly constricted at three points, giving it a moniliform appearance.

It was attached by means of a thin pedicle to the *interior* of the fossa (the plica being quite free), and was easily removed by forceps and scissors, when the fossa was seen to be well marked, and admitted a probe into its canal to the depth of 10 millimetres in an outward and upward direction. The tumor was elastic and somewhat translucent in parts. On incision the capsule was found to be tough, and varied in thickness from 0·5 to 1·0 millimetre. A small amount of thin, opalescent fluid escaped exposing a core of pearly-white laminae, which consisted of scaly epithelium in all stages of degeneration, with fatty granules, thus affording the characters of a cholesteatoma or dermoid cyst. There were no leucocytes in the fluid, or any evidence of an inflammatory process.

The capsule (fibrous) was covered externally, and also lined with living stratified epithelium (squamous). Its walls contained embryonic t ssue.

The cyst was evidently of developmental origin, and not tonsillar. Since the supratonsillar with Rosenmüller's fossa represent the second cleft, such neighborhoods are especially the seat of embryonic vestiges. An exhaustive description of this fossa is to be found in the Journal of Laryngology, Rhinology and Otology, vol. xiii, p. 165.

A pedunculated cyst of the tonsil was shown at the Belgian Society of Otology and Laryngology; from the report it is difficult to judge where it grew from (*Ibid.*, vol, xiii, p. 545), or whether the authors considered as illustrative of cystic degeneration of the tonsil a disease which is often seen, and is essentially a cholesteatomatous process.

Ulceration of the Left Tonsil, with Acute and Considerable Enlargement of Numerous Cervical Lymphatic Glands on Both Sides of the Neck. Malignancy (?)

Felix Semon. (*Jour. of Laryng., Rhin. and Otol.*, April, 1903.) The case which had been shown two months before was shown again as affording a valuable lesson to the effect that not every ulceration of a tonsil in old people, accompanied by enlargement of numerous cervical glands, must be looked upon as necessarily malignant. It would be seen that the ulceration of the left tonsil had quite disappeared, and the tonsil itself had become much smaller, whilst the enlargement of the cervical lymphatic glands on both sides of the neck had also considerably diminished, even more so on the side corresponding to the affected tonsil than on the opposite one. In all probability septic influences had been at work. Malignancy, at any rate, was now completely excluded.

Ulcer of Tonsil Containing Tubercles, which had Yielded to Anti-Syphilitic Remedies.

Lambert Lack. (*Jour. of Laryng., Rhin. and Otol.*, April, 1903.) The patient, a female aged twenty-five, had had a large ulcer, with clean-cut edges and sloughy, irregular base, covering the right tonsil and posterior pillar of the fauces. There was much dysphagia, and the patient was anemic and

rapidly wasting. The glands were tender and enlarged. A diagnosis of tertiary syphilis was made, and the patient placed on large doses of potassium iodid. She had, however, seen other specialists who had considered the case to be possibly malignant or tubercular. By special request, therefore, a small piece of the ulcer was excised for microscopical examination. The sections showed that the mass of the ulcer consisted of granulation tissue with newly-formed capillary loops, but at the deeper part of the ulcer were tubercle-like nodules consisting of giant cells, surrounded by epithelioid and round cells. This seemed to confirm the cautious diagnosis which had been previously given in the case. In spite of it, however, the ulcer, which at first was as large as a two-shilling piece, had diminished to half its size in a week, and was completely healed in a fortnight, under the iodid treatment alone. The patient three months later remained perfectly well. Was the case to be regarded as one of syphilis or mixed infection? There was no history of syphilis to be obtained.

Infiltration of Pharynx and Post-nasal Space.

FITZ GERALD POWELL. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) The patient had complained of inability to sleep with his mouth closed. He stated about six months ago he found that he woke himself up with a loud snoring; this had gradually become more marked, occurring more frequently. He said that since the present trouble began he could fall asleep at any time. He had no pain, and was gaining flesh. There was no interference with deglutition or phonation, and there was no history of syphilis obtainable.

On examination, the whole of the pharynx, more especially the left lateral wall and post-nasal space were found to be the seat of considerable infiltration and thickening, giving the appearance of bulging. There was slight swelling of the edge of the epiglottis on the left side.

The tongue was marked with deep fissures and cracks. The uvula was attached along both its free borders to the posterior pillars of the fauces. The arms and wrists and inside of the foot showed patches of eruption, apparently dry eczema. He had been treated with iodid of potassium and mercury.

Hereditary Specific Perforation of the Anterior Pillar of the Fauces.

DUNDAS GRANT. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) The patient, a boy aged fifteen, was seen for the first time on January 8, 1903, on account of pain and difficulty in swallowing. He was found to have an elliptical opening in the left anterior pillar, with thick, congested edges covered with a grayish-white slough. Behind it on the tonsil, was also a fairly circumscribed excavation with a sloughy floor. The symptoms were of fourteen days' duration, and there was well-marked evidence of a hereditary specific dyscrasia. The exhibitor brought the case before the Society because the opening was very similar to the congenital slit observed in several instances by members of the Society. He thought it would be interesting to observe at a later stage to what degree the opening would resemble the congenital malformation.

Operative Procedure for Relief of Almost Complete Adhesion of the Soft Palate to the Posterior Pharyngeal Wall, the Result of Tertiary Syphilis.

HERBERT TILLEY. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) Patient was a female aged twenty-three, in whom the soft palate was so completely adherent to the posterior pharyngeal wall that only a small probe could be passed from the oro- into the naso-pharynx. It had already been twice operated upon before coming under the exhibitor's care. In each case the adhesions had been divided, but no means had been adopted to prevent readhesion In the course of ten days to a fortnight the original condition had returned. The symptoms complained of were a collection of mucus in the nasal cavities which tended to constantly flow from the anterior nares, inability to breathe through the nose, snoring, and other local discomforts.

Operation.—In view of the possibility of free hemorrhage occurring when the adhesions were divided, a preliminary laryngotomy was performed. The soft palate was then completely separated from the pharyngeal wall, and a strong silver wire was passed from before backward through the soft palate close to its junction with the hard palate, and about

half an inch from the middle line. The distal end of the wire was then made to repierce the soft palate close to its fore margin and from behind forward. By this means a short segment of the wire rested on the posterior surface of the soft palate. The free ends of the wire were then passed from behind forward, one upon each side of the root of the incisor tooth, firm traction exerted on the palate, and the wires twisted upon one another and cut off short in front of the tooth. A similar procedure was then adopted on the other side of the palate.

One wire cut out in about ten days, the second in a fortnight; but by this time considerable healing had taken place over the raw su faces from which the adhesions had been separated.

Every day for three weeks the house-surgeon had passed his finger into the naso-pharynx and exercised firm traction forward upon the soft palatal structures. The operation was performed six weeks ago.

IV.—LARYNX.

The Operative Treatment of Laryngeal Tuberculosis.

Lorenzo B. Lockard, Denver, Colo. (*Philadelphia Med. Journal*, April 18, 1903.) In view of the fact that most of the present methods of treatment of laryngeal tuberculosis produce temporary relief only, and that cures are very rare, the author advocates the adoption of the same surgical measures that are in use in other parts of the body for the cure of localized tuberculosis, specially if the lung involvement is comparatively slight. Dependent upon the location, nature and general condition, some one of the following procedures may be indicated: (1) Division of the pharyngolaryngeal wall; (2) division or complete removal of the epiglottis; (3) tracheotomy, and (4) laryngofissure.

The first operation is done in cases of diffuse infiltration and ulceration of the posterior wall and aryepiglottic folds when uncontrollable dysphagia is present.

With a pair of angular scissors, one blade in the pharynx and the other in the larynx, an incision is made connecting the two passage ways, down to and including the interarytenoid sulcus, and in the median line. This operation can be done under twenty per cent cocain. Rectal feeding is required for a week. Relief is usually marked, and there is a subsidence of all inflammatory signs, which may last for months or years.

The second operation is indicated when the epiglottis is involved, and the organ may be divided from edge to base, or a complete amputation made.

Tracheotomy is indicated for threatened asphyxia, due to edema, perichondritis, abscess or subglottic swelling.

The complete rest afforded the parts accounts for the improvement which follows these operations. The ordinary conservative methods are to be tried first, but these failing, as they usually do, the author recommends a trial of more radical surgical methods. *Richards.*

A Case of Laryngeal and Pulmonary Tuberculosis in a Man Aged Forty-seven.

WYATT WINGRAVE. (*Jour. of Laryng., Rhin. and Otol.*, April, 1903.) The patient, when seen on January 20, complained of loss of voice of four months' duration, which came on suddenly. He afforded no history of phthisis or syphilis. He had lost flesh lately. On examination both ventricular bands and cords were inflated and ulcerated: there was much peri- and inter-arytenoid edema, with limited movements of both cartilages. There were well-marked signs in apices, and his sputum contained tubercle bacilli. The laryngeal edema had now considerably diminished, thus more fully revealing the extensive changes in both ventricular bands and cords. He was being treated with intratracheal injections of guaiacol.

Endothelioma of the Larynx.

JOBSON HORNE. (*Jour. of Laryng., Rhin. and Otol.*, April, 1903.) A microscopic section from the case of a laryngeal growth under his care at the Metropolitan Ear, Nose and Throat Hospital, and which was exhibited by him at the last meeting. A portion of the growth he had removed for

purposes of diagnosis. Under the microscope the growth presented the structure of an endothelioma.

Functional Aphonia in a Man, with Unusual Symptoms.

LAMBERT LACK. (*Jour. of Laryng., Rhin. and Otol.*, April, 1903.) The patient, a male aged fifty-eight, had lost his voice suddenly six months ago, and had never regained it. He spoke now in a whisper, but with much strain. The expiratory muscles were all tense, and the pulse became more rapid during speech. On examining the larynx, the parts appeared to be normal, and the movements were normal until attempted phonation, when the larynx appeared to be tightly closed and to prevent all air escaping.

It was probably a case of spasm of the larynx, but the patient was not able to say even one word in a loud voice, thereby differing from most similar cases, in which one or more words could be loudly uttered at the beginning of each sentence. On the other hand, the patient could sing loudly and naturally. Another point of interest was that he had a similar attack the previous year, losing and regaining his voice quite suddenly. He had not used his voice excessively, although he had shouted at times. He had recently lost a sister with tubercular laryngitis. It was possible that suggestion had something to do with his present condition.

Dr. MCBRIDE thought this case one of great interest. It was a case of spastic aphonia. The abdominal muscles were tense when the patient attempted to speak. The interesting point about the case was that the false cords covered the true cords when phonation was attempted. He had observed in certain voice users, who complained of early fatigue of the voice, a similar condition, but to a less marked extent. He wondered if other members had observed it also. The parts during rest were normal, but on attempted phonation there was apparently hypertrophy of one or other, or of both false cords. Whether this was to be looked upon as a "missing" or early stage of spastic aphonia or dysphonia was a point which had interested him for some years.

Cyst of Ventricle of Larynx Opened when Operating on a Case of Malignant Disease.

LAMBERT LACK. (*Jour. of Laryng., Rhin. and Otol.*, April,

1903.) The patient, a male, had malignant disease of the right vocal cord, etc., for which an operation was performed. Previous to operation, a smooth, fixed, hard swelling was noticed overlying and apparently attached to the cornu of the hyoid bone. There were no enlarged glands. On cutting across the ventricular band during the thyrotomy there was a sudden gush of creamy fluid, nearly 2 drachms escaping. The swelling over the hyoid bone disappeared. At first it seemed as if an abscess had been opened, but after consideration and exploration it was considered more likely that the cavity was a cyst-like projection from the ventricle, such as was normally present in certain apes—e. g., the orang-outang—and was rarely met with in man. This diagnosis was confirmed by sections of part of the wall which was excised, and which showed that the cavity was lined by ciliated epithelium.

Epithelioma of the Larynx.

Attwood Thorne. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) This man was first seen at the London Throat Hospital on December 16. He had then suffered from hoarseness for six months, and slight pain on swallowing for a few days.

A view of the larynx (which was only obtained with difficulty) showed that the left cord was fixed in the mid-line, and that there was a growth involving the left arytenoid and extending into the aryepiglottic fold on that side. The larynx was slightly tender when examined from without, and there was a large gland just under the ramus of the jaw on the left side. There was a good deal of pain referred to the left ear, and restlessness at night. The man was of good physique, a carpenter, still pursuing his trade. He had two healthy grown-up children, and denied having had syphilis.

He was put on 15 grains of potassium iodid and a drachm of perchlorid of mercury, and for the last fortnight had been an in-patient. With the exception that there had been temporary swelling for a few days of the right arytenoid, there had been little to note, except that the enlarged gland had somewhat increased in size.

Case of Chronic Laryngitis with Interarytenoid Pseudo-Pachydermic Swelling, Probably Due to Purulent Rhinitis.

DUNDAS GRANT. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) The patient, a girl aged twenty, was first seen the week previous on account of h arseness, which was worst in the morning, and which had lasted two months; similar hoarseness was present during the whole of the previous winter, but had disappeared as that season passed off. There were crusts on the vocal cords and on the summit a sessile swelling, which interfered with the apposition of the cords. This swelling was irregular, and presented a white, sodden appearance. The patient was the subject of muco-purulent rhinitis, and the secretion tended to dry in the nose. There was deviation of the septum into the right nostril, and the right middle turbinated body was hypertrophied. The exhibitor considered the laryngitic condition to be the result of the inhalation of morbid secretion from the nose, and that the swelling in the interarytenoid space, which simulated pachydermia, was the result of proliferation and maceration of the superficial epithelium. He had prescribed a simple nasal wash, and the patient, presented at the Society, stated that the hoarseness had very much diminished during the week that the nasal wash had been employed. The swelling in the interarytenoid space had become somewhat smaller.

Paralysis of the Left Vocal Cord, Due to Lead Poisoning.

CHARTERS SYMONDS. (*Jour. of Laryng., Rhin and Otol.*, May, 1903.) The patient, a girl aged eighteen, exhibited the usual paralysis of the limbs seen in this malady, and besides had paralysis of many muscles of the trunk. A blue line on the gums was marked. The left cord lay in the cadaveric position, and did not move on phonation. The rarity of the laryngeal affection was commented upon.

Ankylosis of Left Crico-arytenoid Articulation in a Woman Aged Twenty-three.

DONELAN. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) This case was shown on account of one of its less obvious features. The patient, a French lady, aged twenty-three, when twelve years old had been seen by Dr. Landouzy, of

Paris, who considered she was suffering from incipient tuberculosis. She, however, had apparently recovered, and had remained in good health until six years ago, when she had what appeared to have been influenza with acute laryngitis. Previously she had had an excellent speaking and singing voice, but at this time had completely lost it for about three weeks, after which it had gradually grown stronger. During the attack she had been treated by her family doctor, but hemoptysis having occurred a consultation had taken place, when the opinion had been given that the case was one of pulmonary tuberculosis and chronic laryngitis. The hemoptysis had continued at intervals for over a year, when it had ceased, and except for her defective voice she had been quite well since.

The most obvious symptoms were those of left abductor paralysis. She produced her present voice by compensatory approximation of the right vocal cord. There were no thoracic signs, pulmonary, vascular or glandular, and there were no evidences of former pulmonary lesions or impairment. The paralysis was complicated by ankylosis of the crico-arytenoid articulation, as evidenced by the absence of displacement of the affected cartilage on phonation, and by immobility on the application of a probe under cocain.

The case was regarded as one of left adductor paralysis occurring in the course of an acute laryngeal influenza, with subsequent bleeding from the laryngeal or tracheal mucous membrane, and in which ankylosis of the inflamed joint had supervened.

The patient had had no treatment of the larynx, except during the acute stage, and as, in her present employment, a better voice was very desirable, the opinion of the members was asked as to whether at this distance of time it would be advisable to attempt to set free the articulation, and try faradization.

Chronic Edema of Larynx.

DUNDAS GRANT. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) Mrs. I——, aged 45, was first seen January 8, 1903, on account of difficulty in swallowing without pain. This had commenced about twelve months ago. It had been

associated with slight hoarseness, most marked in the morning, and the voice had now the tone suggestive of a swelling in the pharynx. The larynx was the seat of a pale, somewhat solid edema of the epiglottis, and both aryepiglottic folds, especially the left; the cords appeared to be normal and mobile, though the left one, which was only partially visible, was somewhat restricted in its excursions. There was no ulcerations anywhere, but the palate and pillars of the fauces, especially the left one, were somewhat thickened. The patient had been losing flesh for the last three years, and had become pale, whereas she formerly had a good color. The urine was scanty and free from albumen; there was no history of prolonged suppuration; no suppurating gingivitis, no evidence of tuberculous or specific infection; no enlargement of glands. The swelling seemed rather solid for simple edema, too inactive for tuberculosis, and the suggestion occurred that it might be a form of amyloid change; the spleen was perceptible, and probably enlarged. The liver dulness was considerable, but, pending examination by a skilled physician, the exhibitor would not dwell upon this. He would be glad of suggestions in the meantime as to diagnosis and treatment.

Felix Semon was greatly interested in this case. It was so recently that he had brought a similar case before the Society (November, 1902), when he had also read notes of three other cases, that many of those present would remember that the subject of his first case, whom he saw many years ago, was the wife of a medical practitioner, who had come to him with a general infiltration of the uvula, epiglottis, soft palate and larynx. At first sight no one would have doubted but that it was a case of tuberculous disease. The only thing which had struck him as being unusual had been the infiltration of the pharynx and arches of the palate, just mentioned. He had examined the chest very carefully, but had found no evidence of tuberculous disease. He had tried various remedies, local and general, for nearly two years without effecting any improvement, and the patient had finally left him. Two years later the patient had come back, and the infiltration had disappeared, although she had been under no treatment in the meanwhile. Dr. Dundas Grant

had spoken of the case as one of amyloid disease. He, the speaker, wished to emphasize that he had merely spoken, when bringing his last case before the Society, of a lardaceous appearance, as he had no proof that the affection was actually connected with amyloid disease; the look of the parts merely reminded one most of the appearance of a kidney which had undergone lardaceous degeneration—this, they would agree with him, after having seen Dr. Grant's case, was a perfectly justifiable comparison. He hoped sincerely that the sequence of events in this case would be the same as in his own, but the spontaneous disappearance of the infiltration did not help them in the least as to its pathology. Since he had shown his last case he had read the original description of Quincke's disease, and felt sure the cases in question did not belong to that category. Following the suggestion of Dr. FitzGerald Powell, he had removed, with his patient's consent, the uvula, and had submitted it for microscopical examination to Mr. Shattock, who found no evidence of amyloid disease; the only thing he had so far found at a preliminary examination was an enormous infiltration of round cells. He was now waiting for a further report. He wished once more to express his pleasure that the Society had had an opportunity of seeing a particularly interesting instance of a hitherto undescribed, and certainly, pathologically, very obscure case.

DeHaviland Hall said that the laryngeal aspect of this patient reminded him of the case of a man shown to the Society six or seven years ago, the diagnosis of which had been very doubtful at the time; some members suggested lupus and others a chronic tuberculous condition. The disease had made gradual progress, and some eighteen months after showing the patient Mr. de Santi had performed tracheotomy. He had lived three years after this operation, enjoying a fairly healthy life, but eventually had died of pulmonary tuberculosis. The condition had therefore probably been a tuberculous infiltration; there had never been any ulceration, simply a pale, puffy swelling of the epiglottis and aryepiglottic folds, and the mucous membrane covering the arytenoid cartilages. The aspect had been, in fact, much the same as in this patient, but in the case he was relating

the pharynx and soft palate had not been involved.

BROWN KELLY had had a somewhat similar case, which he had described two years ago in the *Lancet* under the name of "sclerotic hyperplasia of the pharynx." He thought the President had had an opportunity of examining the case. The most marked change had been in the pharynx. The uvula had been immense y enlarged, being not only enlongated, but also generally increased in size, and the lateral parts of the posterior pharyngeal wall had presented great and uniform thickening The roof of the naso-pharynx had undergone similar changes. Treatment had had no effect on the condition. There was no history of syphilis, and anti-syphilitic remedies had given no relief. The last occasion on which he had seen the patient he had noticed that there was a tendency for the whole condition to grow less. He had cut off a large piece of the uvula and had examined it, but was unable off-hand to give details of the microscopical structure. These, however, together with illustrations of the pharyngeal appearances, might be found in the article referred to.

DR. GRANT, in reply, referred to several cases of amyloid changes in the larynx described in an article in a recent number of Münchener Medicinische Wochenschrift. He was bound to say that the examination of the rest of the body, which he had described to the society, rather contradicted the idea of amyloid disease, being negative as far as that was concerned. He thought these cases extremely puzzling, but no doubt, as their experience of them accumulated, they might be less in the dark than they were at present. He felt very uncertain about the real nature of this one. Quincke's disease was a more sudden thing, which passed off quickly.

V.—MISCELLANEOUS.

Adrenalin.

LEHMAN, (*Muench. Med. Wochen.*, 1902), has tested the action of adrenalin by injecting gradually increasing dose of

1 per cent. solution in the larger or smaller portions of the liver, and made them so anemic that they could be excised with a knife. There was not a drop of blood, and even later no hemorrhage, in spite of the severe secondary hyperemia. The action did not take place when he first excised the pieces of liver and then applied the solution to the bleeding surface. *Levy.*

The Uusual Methods of Treatment and Operation in the Ear and Throat Clinic at Rostock.

KOERNER, Rostock (*Archives of Otology*, Vol. XXXII, No. 2.) Examination of patients is made in broad daylight by the aid of strong electric lights. There is but one dark room, that used for transillumination of the accessory nasal cavities.

Digital examination of the naso-pharynx is made with a protected finger. Adenoid operations are performed in the well equipped operating-room.

As minor operations must be performed in the dispensary rooms, the painted walls are washed daily, all instruments are boiled. dressings are sterilized and soiled dressings immediately placed in porcelain receptacles.

In mastoid operations in men all the hair of the head is cut short and a wide area on the diseased side shaved.

Changes of dressings are made in a special room. After the removal of the dressing, the surrounding parts are cleansed with benzine and the head of the patient is wrapped in a sterile towel, which has a central opening, through which the wound and ear appear .

Irrigation fluid is simple sterile hot and cold water without the addition of any antiseptic.

Gauze strips have a selvedge and are in rolls. Cotton-mounted tooth-picks are collected in test tubes and there sterilized.

In pyocyaneus infection of the middle ear, which is characterized by the greenish discoloration of the gauze the author has found packing and dressings impregnated with two to five per cent. silver nitrate solution the most efficacious treatment.

To guard against the exhalations of tubercular patients he

fixes a square handkerchief over the mouth and nose and this is held at the upper corners by tapes which, weighted by bullets are suspended over the ears. *Campbell.*

Tabes, with Early and Unusual Implication of Various Cerebral Nerves.

FELIX SEMON. (*Jour. of Laryng., Rhin. and Otol.*, May, 1903.) The patient was a stud-groom, aged forty-six, married.

Complaint.—Tightness round waist, difficulty in speech and in swallowing.

Duration of above symptoms, six months; has had lightning pains for two years.

Family History.—Good; married for eighteen years; six healthy children; none dead, no miscarriages.

Previous Health.—Good till twenty-four years ago, when he had some *kind of venereal disease;* denies any secondary symptoms. Never had any throat affection.

Present Illness.—Two years ago "lightning pains" in lower extremities. *Six months ago* "tight feeling" round abdomen at level of umbilicus. *Five months ago* he began to have trouble with his throat, which consisted of a difficulty in swallowing solids; no trouble with fluids. *Four weeks ago* feeling of numbness in inside of left cheek which, later, changed into right; now quite free. *Three weeks ago* voice began to get weaker. *Two weeks ago* his wife noticed that he made a peculiar noise when he was asleep. He replied that he was going to turn a "roarer." *One week ago* right eyelid began to droop, and patient had diplopia for one day. *Three days ago* some difficulty in starting micturition.

Never any loss of sight or hearing; no gastric or laryngeal crisis; no difficulty in walking at daytime or night; never any pains in tongue or throat.

Present Condition.—A rubicund man with tortuous temporal arteries; general health good; also mental.

Special Senses.—Smell and *hearing* good. *Taste* slightly affected on left side of tongue. *Sight:* Right, 6–8; left, 6–8. *Fields* not contracted. *Optic discs:* Left, normal; right, edge of disc soft, not blurred. Condition due to a retinal edema,

which causes a slight haze. Arteries suggestive of granular kidney, being irregular and "silver-wired."

Cranial Nerves.—III., IV., VI. Weakness of right internal rectus; drooping of right upper eyelid; right pupil larger than left; right, no reaction to light; left, faint to strong light. Both pupils react to convergence. V. *Motor*, normal; *sensory*, slight affection left side. VII. Slight weakness right side, general, passing off. XII. Tongue deviates to right when protruded; other movements all good. IX., X. *Soft palate: Volitional movement* abolished; *reflex irritability* completely abolished; *tactile sensibility* more affected than four weeks ago; *slight* touches not felt on either side; *forcible probing* felt and localized on right, not felt on left; touching on middle line felt on right. Electrical reactions of soft palate: *Faradism*, no response to moderate current; *galvanism*, twelve cells, KCC greater than ACC; no polar change.

Larynx.—Vocal cords slightly excavated, being, in quiet respiration, 4 millimeters apart. *On deep inspiration* not further abducted. *On phonation* come promptly together. *On deep inspiration* following phonation right vocal cord is moved outward a shade more than left; there are no ataxic movements of vocal cords. During examination had an attack of coughing with characteristic laryngeal stridor—inspiratory.

Motor system not affected; *sensory system*, slight analgesia ulnar sides of both upper extremities, a band across chest, and some change in legs; girdle sensation, numbness in tip of second fingers. *Reflexes, deep; arm*-jerks diminished; *knee and ankle*-jerks absent; *plantars*, indefinite, flexor; *organic*, some trouble in starting micturition; *swallowing* solids difficult, fluids not unless patient is in a hurry.

General Health.—Aortic second sound accentuated; *urine* low specific gravity, with trace of albumen; no hypertonia, no Charcot joint; no perforating ulcer; *nails more brittle.*

The point of interest in the case was, as stated above, the early and unusual implication of various cerebral nerves. It was, of course, well known that laryngeal abductor paralysis sometimes was one of the earliest, if not the earliest, sign of tabes, and might even be present at the time when the patellar reflexes were not yet lost. Sir Felix Semon had demon-

strated a case of that kind some years ago at the Laryngological Society, but he had never seen a case in which so complete a paralysis of the soft palate as that witnessed in this case was amongst the early symptoms of tabes; and, indeed, he did not remember, amongst the very many cases of tabes with laryngeal complications which he had seen, a single one in which paralysis of the soft palate had played any role.

The second point of interest was that, in spite of the complete motor paralysis of the palate, swallowing of fluids did not produce regurgitation through the nose when he drank slowly.

Thirdly, it was very remarkable that, seeing how complete the paralysis of the palate was, the tongue should, until a few days ago, have so completely escaped. As a rule, when there was paralysis of the palate and the larynx, there was a triad, the tongue being also, and often enough even preponderately implicated.

Fourthly, it was remarkable that there were considerable vacillations of the clinical symptoms, the paralytic phenomena in the tongue, the pa'ate, the larynx and the eyelids being distinctly more marked on some days than on others.

Finally, it might be observed that the patient had had no laryngeal crises at any time of the illness, but that his breathing now at nights was distinctly stridulous and sonorous.

BOOK NOTICES.

Diseases of the Nose and Naso-Pharynx—First Part.

By Zarniko. Printed by S. Karger.

The widely known text book of Zarniko on Diseases of the Nose, now appears in its second edition. It is a characteristic book in the best sense of the word. Without neglecting the results of other experts, the author adds everything new that has appeared in recent years in his line to the bountiful harvest of his own practice. Through this subjective coloring of his subject, the author does not weary one even when discussing dry theoretical questions. References to literature allow the reader to make for himself an intelligent judgment. The anatomy is illustrated in clear and pertinent fashion, partly by schematic and partly by photographic cuts. In the physiologic portion, the sense of smell is given a careful discussion, something that is lacking in many text books. A third part is devoted to the general pathology and symptomatology. In special chapters, the author discusses the disturbances which result either from stenotic or unusually large noses, also the disturbances of the smell, speech and voice, and, finally the pathologic connection between nose, and the ear, eye, brain and other remote organs. In the fourth part, the general diagnosis, he discusses at special length the procedure in the ordinary nasal examination and in those cases where the more delicate examinations must be used. The practitioner who desires to investigate this territory of more delicate examination, will have many points for which to thank him. The last part treats, in a practical manner, of the general therapy. The special part will appear in the summer. *Levy.*

Middle Ear Suppurations.

By Dölger, Munich. Published by T. F. Lehmann.

Since 1872, Bezold of Munich, has published triennially statistics concerning his clinical and private practice. The incomparable value of this work consists in the fact that it is published by a careful observer, who has not changed the classification of the different forms of diseases, and so we are able to compare the number in the last epoch with those of the preceeding 20 years. It is thus possible to give an objective judgment upon the value of certain methods of treatment. Dölger has published a critical and statistical portion of Bezold's work, dealing with the suppurations of the middle ear seen in the years from 1899 to 1901, which covers 140 pages. It is impossible to give the valuable contents in a mere abstract It is of especial interest to compare the numbers of clinical and private patients and to observe the influence of neglect on the former. The author criticises very sharply the dry treatment of the ears by means of iodoform gauze tampons. Of 22 acute cases so treated, 9 developed complications; of 23 chronic suppurations, 13 went on to carious destruction. His boric acid powder treatment still seems the best method to him.

Levy.

Atlas and Epitome of Otology.

By Gustav Bruhl, M. D., of Berlin, with the collaboration of Prof. Dr. A. Politzer, of Vienna. Authorized translation from the German, edited by S. MacCuen Smith, Philadelphia. W. B. Saunders & Co., Philadelphia.

It has been the object of the author to produce "an illustrated clinical handbook to act as a worthy substitute for personal instruction in a specialized clinic." That this object has been attained will be readily conceded upon examination of the book. The predominant feature of the work is the very complete exposition of the minute anatomy and pathology of the ear. This is portrayed by 244 colored figures, 39 lithographic plates and 99 text illustrations. These have been drawn with the utmost fidelity to nature are beautifully executed typographically. The second half of the

book is a concise text upon the anatomy, physiology and pathology of the organ of hearing. Though necessarily brief, it gives a valuable epitome of these subjects. The work will soon find its way to the library shelves of every otologist, and it will also meet extensive appreciation from general practitioners and students.

Diseases of the Nose, Pharynx and Ear.

By Henry Gradle, Professor of Ophthalmology and Otology in the Northwestern University Medical School, Chicago. W. B. Saunders & Co., Philadelphia.

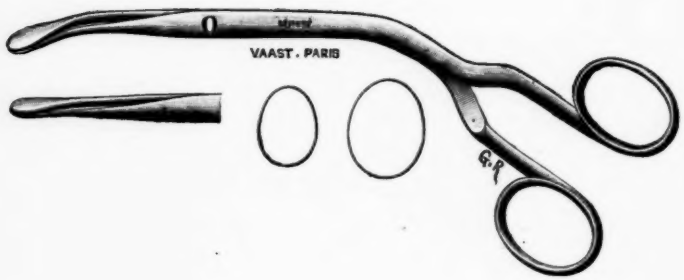
The author has admirably fulfilled the intention, avowed in his preface, of presenting disease as he has seen it during an experience of nearly twenty-five years. He has endeavored to lay especial emphasis upon those diseases which cause the most anxiety to the physician and which are not always fully elucidated in text-books. Carrying out this plan, Dr. Gradle has produced an eminently practical work which is, in some respects, unique. There is a modest air and conservative tone throughout the book, which is in pleasing contrast to the cocksureness and dogmatism sometimes encountered. Thi feature is particularly observable in his remarks upon treatment. No therapeutic measure is recommended which has not been well tried by experience, "even though sanctioned by the tradition of text-books." Readers of the work may not agree with the author in all his conclusions, but they will be thoroughly gratified with his modesty and candor; and they will, doubtless, give unanimous commendation of the work.

Nothnagel's Encyclopedia of Practical Medicine:

Diphtheria, By Wm. P. Northrup, M.D.; **Measles, Scarlatina, German Measles**, by Theodore von Jürgensen, M. D., Professor of Medicine at the University of Tübingen. Authorized translation from the German, under the supervision of Alfred Stengel, M. D. W. B. Saunders & Co., Philadelphia.

Those who are not sufficiently familiar with the language to avail themselves of German medical literature will welcome this volume of Nothnagel's Encyclopedia. The emi-

nence of the American editor is sufficient assurance that the matter is well worth while. With the exception of the article on diphtheria, the articles in this volume are taken from the original. Northrup's monograph is an excellent substitute for that of the German author. Northrup was associated, at the New York Foundling Hospital, with Dr. O'Dwyer, and his consideration of intubation, therefore, possesses especial interest and value. Von Jürgensen's historical notes on measles, particularly those on the Faroe Islands epidemic, are worthy of study. In every respect, the work takes rank with the best.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